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THE AMERICAN FARMER

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THE FENCE-CORNER.

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For the present we offer this watch and chain for a club of 10 subscribers and $2.50 added money—$12.50 altogether—or we will send both watch and chain (without the paper) to any address by insured mail for $5.00. With the paper, one year, $6.25.

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Every ill of sickness can be warded off if treated in time with proper medicines. A feeling of discomfort and pain generally precedes every serious illness. In the interest of our readers and their families, we have collected in one medicine chest enough standard remedies to keep any family in perfect health for five years if they are properly administered. If your bowels are sluggish look out for peritonitis, typhoid fever, or some kindred disease, and take a few anti-constipation or cathartic pills. If you have headaches or feel oppressed after a good hearty meal, take an anti-dyspepsia pill. If you are generally rundown and feel listless, and especially if you are pale and thin, try a few iron pills. If you are generally disordered in your digestive regions, remember that you can straighten yourself out with a few liver pills. If your bones ache and you feel full of malaria, take a few quinine pills from our Handy Box. Don't forget that the little ailments just mentioned are merely the advance scouts of the thousand diseases that take men off.

This crowning blessing, wrung by patient and persistent effort from the grasp of the druggists, will afford almost instant relief in all cases arising in any ordinary household. The price of this valuable box is $1, delivered free. The quinine pills alone are worth the amount, and the rest may be considered a premium from THE AMERICAN FARMER. Below we enumerate the contents of the box: 100 Quinine Pills; 100 Liver Pills; 100 Anti-Dyspepsia Pills; 100 Anti-Constipation Pills; 100 Iron Pills; 100 Cathartic Pills.

THE AMERICAN FARMER guarantees the above medicines to be absolutely pure and genuine in every case. Address

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NICKEL SILVER TABLE WARE.

We have secured, for the benefit of our subscribers only, a line of Table Ware which for style and beauty cannot be surpassed at less than double the price elsewhere. It is a new thing, also, and most of our readers have, beyond doubt, never seen a specimen of it. It is called nickel-silver, and is a compound metal intended to take the place of the old-fashioned German silver. In place of the brassy look of the German silver it has a slight steely tint, by which alone it may be told from pure silver. It is very hard and very strong, at the same time of light weight. It takes a higher polish than silver, which it will retain until worn out. It is the same material clear through, there being no plate of one metal upon a base or core of another. It is 21 per cent. of pure nickel. Being too hard to stamp, they are cast and polished in the plain tip pattern. This is the pattern in which the old-fashioned Sterling spoon was made, and is familiar to all. Owing to the strength and high quality of the metal, they can be made with more slender handles than the plated ware, and for this reason the model of the Sterling silver spoon has been adapted to it. We are confident this ware will please our patrons, as it can be polished or scoured as much as occasion requires, and the same care is not necessary in handling it in the dish-pan as with plated silver.

A set of six tablespoons will be sent, postpaid, to any subscriber for $1.35
A set of six dessert spoons for 1.15
A set of six teaspoons for 80
A set of six forks for 1.55
A set of six dessert forks for 1.15

These sets all comprise six pieces. By the dozen they cost just twice as much as by the set of six. We will send as a free gift a set of teaspoons and tablespoons to anyone who will send us a Club of 6 yearly subscribers at $1 each.

Or a set of teaspoons, tablespoons, and medium forks for a Club of 10 yearly subscribers at $1 each.

Or a set of teaspoons, tablespoons, medium forks, and dessert forks for a Club of 12 yearly subscribers at $1 each.

Or a set of teaspoons, tablespoons, dessert spoons, and medium forks, for a Club of 13 yearly subscribers at $1 each.

Or a set of each of the five articles for a Club of 10 yearly subscribers at $1 each, and $1.50 added money.

Any housewife who will order a set of this ware may rest assured that she will be the envy of her neighbors. Address

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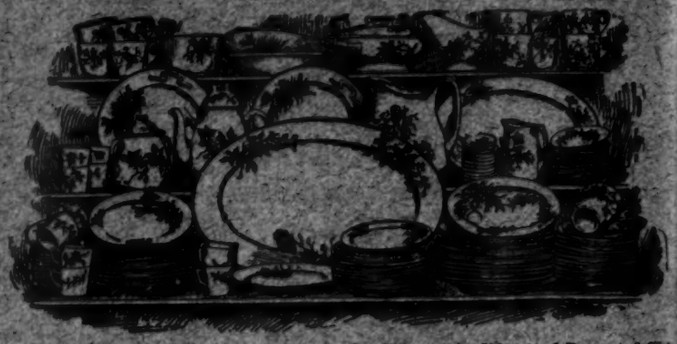
GOLD BAND
DECORATED TABLE SERVICE
AT CUT PRICES.

Read Below the Four Selections to Suit Various Tastes and Needs.



We have secured for the benefit of our subscribers a splendid set of Decorated China with gold band around the edge of the pieces. It is made especially for us at the largest and best pottery in the United States. We buy in very large quantities, and thus we are able to supply this elegant ware as described below. We are able now to make a grand combination of four different sets to choose from.

Our China is highly ornamental, being decorated in three colors, with a design of fruits and flowers, in addition to which there is a gold band about the edge, as shown in the cut, which is made from a photograph of a set of the China we offer.

In order to save space, all the pieces are shown in one picture. The reader can readily tell which are referred to. The same plates, teapot, sugar-bowl, etc., go with all the sets, but in the larger offers more and more pieces are added to the tea set. All are of the same beautiful style of decoration.

First is

A 56-PIECE TEA SET.

It consists of 12 plates, tea size; 12 fruit saucers, teapot and cover, sugar-bowl and cover, a creamer, one bowl, one dozen tea cups and saucers to match, one bread plate, and one cake plate.

DINNER AND TEA SET COMBINED, 84 PIECES.

This beautiful set comprises 12 breakfast plates, 12 tea plates, 12 cups, 12 saucers, 12 fruit saucers, 12 individual butter plates, two cake plates, one teapot and cover, one sugar-bowl and cover, one creamer, one slop bowl, one large meat platter, one large and stylish gravy-boat, and one large vegetable dish and cover, in all **84 Pieces**, making a complete dinner or tea set for any table.

EXTRA DINNER AND TEA SET COMBINED, 100 PIECES.

This set is the same as the 84-piece set, with the addition of the following beautiful and useful articles, viz: 12 pie plates, one pickle-dish, one water-pitcher, and two bakers, or uncovered vegetable dishes, in all 100 pieces.

GRAND EXTRA DINNER AND TEA SET COMBINED, 125 PIECES.

This the same as the 100-piece set described above, with the addition of the great turkey platter and one dozen after-dinner coffee cups and saucers to match.

This makes the grandest China premium ever offered entire by us or any other publisher, and at a price below that possible to anyone else.

HOW TO SECURE IT.

First, the Tea Set. We will send this beautiful 56-piece tea set, by express or freight, for $6.25, or for a club of 10 yearly subscribers and $2 additional; or we will give it free for a club of 20 yearly subscribers at $1 each.

The 84-piece dinner and tea set combined will be sent to any address in the United States as a Premium for a Club of only 10 subscribers for one year and $3 additional, or for a Club of only 20 subscribers for one year and $1.50 in money additional; or we will sell it outright for $8.10. We prefer the Club.

The 100-piece extra dinner and tea set combined will be sent to any address in the United States as a Premium for a Club of 10 yearly subscribers at $1 each and $5.75 added, or for a Club of 20 yearly subscribers and $3 added; or *free* as a Premium for a Club of 25 yearly subscribers. For sale at $10.25.

The grand extra combined dinner and tea set of 125 pieces we will send to any address in the United States as a Premium for a Club of 10 yearly subscribers and $8.75 added, or for a Club of 20 subscribers and $4.40 added. Sent as a *free* gift to a Club-raiser who sends in a Club of 45 yearly subscribers. For sale at $13.50.

The China will be carefully boxed and shipped by express or freight, the receiver to pay charges of transportation. Fast freight takes a little more time than express, but it is preferable, unless the goods are needed in special haste; because the charges are very much lower by freight, and, in fact, except to very distant points, amounts to but a trifle.

Address

THE AMERICAN FARMER CO.,

1729 New York Avenue, Washington, D. C.

THE AMERICAN FARMER.

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PROF. C. V. RILEY.

The Distinguished Entomologist Whose Labors Have Had a World-Wide Value to Farmers.

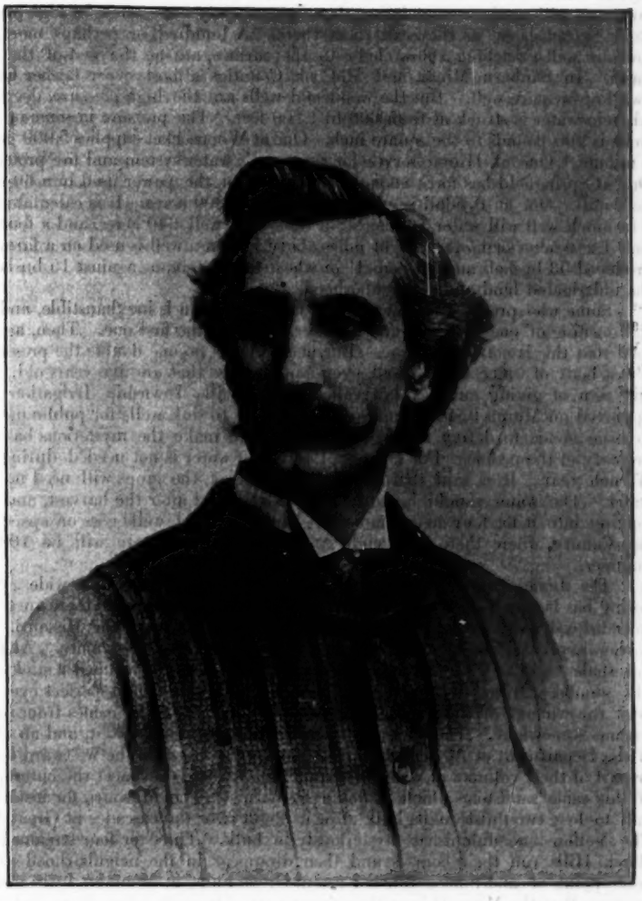
BY HARVY AUSTIN.

TO NO ONE man now living are the farmers of America and Europe more indebted than to Prof. C. V. Riley, the distinguished Chief of the Entomological Bureau of the Department of Agriculture. He is a genuine benefactor, for his life-long studies of the nature and habits of insects has equipped him with a knowledge that is always ready for the service of the farmers whenever some new form of injurious pest assails them, and from him they learn the best and most effective method of protecting themselves against the destroyers of their crops and fruits. The money value of the knowledge that he and his collaborators have furnished to the farmers is simply beyond calculation. The unrestrained ravages of a single insect, like the Colorado beetle, would cost the country millions of dollars every year. Out of the abundance of his knowledge he has been singularly successful in devising means by which the ravages of insects can be checked, and the expressions of gratitude to him are not confined to this country, but the farmers of England join heartily in them. The *Farmers' Magazine*, of England, says: "At the head of modern economic entomology stands Prof. C. V. Riley, the Government Entomologist, of the United States." In gratitude for his studies of the Hessian fly and the hop fly, so important to the agricultural prosperity of England, he was elected honorary member of the Royal Agricultural Society of England, and honorary Fellow of the Entomological Society of London, and the Republic of France has bestowed on him the cross of the Legion of Honor.

Prof. Riley was born near London, and received the rudiments of education in the schools at Chelsea and Walton. He took advanced courses at Dieppe, in France, and Bonn, in Germany. From the first he was distinguished by an ardent love of natural history and of drawing. He took first prizes in the latter, both at Dieppe and Bonn, and was strongly urged to devote himself wholly to art. But he was early thrown on his own resources, and emigrated to America, finally settling down on a farm 50 miles south of Chicago. There he began the study of injurious insects, which has become the main part of his life work. His ability in this line attracted the attention of the proprietors of the *Prairie Farmer*, and they attached him to the staff of the paper. His contributions gave him and the paper much reputation, but in 1864 he felt that the call of the country was superior to that of science, and he enlisted as a private in the 134th Ill., in which he served until the regiment was mustered out, and he was honorably discharged. He returned to his entomological and other work on the *Prairie Farmer*. This soon attracted so much attention that in 1868 he was selected to fill the newly-created office of Entomologist for the State of Missouri. He held this office for nine years, and made a National reputation. He published nine annual reports, which may be considered as text-books, for the science of entomology, which was then in its infancy. Until they appeared very little had been published as to the best methods of destroying noxious insects on a grand scale. The most eminent of modern nationalists—Charles Darwin—said that the reports were of great value to him, and the *Entomologist Magazine*, of London, pronounced their author "the foremost ecomonic entomologist of the day."

In 1874 Missouri was invaded by the grasshoppers, which ravaged the country west of the Mississippi from 1873 to 1877. Prof. Riley threw himself energetically into the work of staying the pest, and devised a number of very effective measures. His reports for 1874, 1875, and 1876 contained exhaustive studies of the plague, and gave the world its first accurate knowledge of a visitation which was as old as Egypt. He saw that the matter transcended State lines, and labored vigorously to secure the passage of a bill by Congress to appoint a National Commission to investigate the plague. When the bill became a law he was selected as the Chief of the United States Entomological Commission, as it was termed. This body made an exhaustive study of the matter, the results of which were embodied in five reports. While engaged in this work he was appointed, in 1878, to the position of Entomologist of the United States Department of Agriculture.

The Division of Entomology, as it exists, is wholly Prof. Riley's creation. He had planned it as it now is from the time he received his appointment as Entomologist, and it is to-day the leading institution of the kind in the world. He has a corps of assistants whom he has carefully trained to their work, and they are animated by the same spirit of thoroughness and exactitude which characterizes all that he does. From their ranks have been taken several able entomologists for the State Stations. The clerical force has been similarly trained. With every



PROF. C. V. RILEY.

detail of the administration of the Bureau Prof. Riley is entirely familiar. He keeps himself so by constant study of the minutiæ of administration, as well as of the general principles governing the work. Everything is systematized to the last degree, and at any moment he is able to lay his hands on any fact or information at an instant's notice.

The amount of writing he has done is prodigious. Four years ago a bibliographical report gave the titles of 1,555 articles written by him, and 479 more written by him in collaboration with others. If the collection of his writings

were extended to the present day, it would show an immense addition to this. In spirit of the multifarious and exacting duties devolving upon him, he has been more prolific of late years than ever before.

In addition to his routine work and practical researches, he does a great amount of purely scientific investigation; he is honorary Curator of the Department of Insects of the National Museum; he is corresponding member of nearly all the entomological societies in the world; was the youngest President of the Academy of Sciences of St. Louis ever elected to that honor; he is a Fellow of the American Philosophical Society; of the American Society for the Advancement of Science, and an active member of the American Pomological Society, and the Association of Scientific Agriculturists. He helped found the Entomological Society and Biological Society of Washington, and is an honorary member of any number of horticultural societies. He was one of the Commissioners of the Department of Agriculture to the Paris Exposition.

In person Prof. Riley is above the average hight, with an athletic form, and a refined, rather poetic, but strong countenance. He speaks quickly and positively, but pleasantly, and is strongly impatient of any waste of time, of the value of which none knows better than he.

Artesian Wells in South Dakota.

The story of the artesian basin under part of South Dakoto seems fabulous. It is even more astonishing than the wealth of coal that underlies the farms of North Dakota. God does, indeed, move in mysterious ways His wonders to perform when to the poor farmer, amidst the cold blasts of the Northern Winters, He distributes coal that is to be had for the taking of it, and when under the South Dakotan soil, that would be as rich as any in the world were it but moistened, He seems to have placed a great lake, or, as some would have us believe, a vast sea.

Under the Jim River Valley, in both States, there is said to lie a vast lake of crystal water. The fact is amply proven in South Dakota, where, between the northern and southern boundaries, there are already more than 50 high-pressure wells, or "gushers," as they call them there. A hundred, or perhaps more, low-pressure wells, reaching a flow closer to the surface, are at the foot of the same basin. In Sanborn, Minor, and McCook Counties almost every farmer has his own low-pressure well. But the wonderful wells are the high-pressure, deep ones, wherein water is struck at from 600 to 1,200 feet. The pressure in some of these wells is 200 pounds to the square inch. One at Woonsocket supplies 5,000 gallons a minute. One at Huron serves for the town's water system and fire protection. One at Springfield has force enough for more than the power used in a 60-barrel flour-mill. One at Tyndall is expected to irrigate 800 acres. It is calculated that a two-inch well will water 160 acres; a three-inch well 640 acres, and a four-inch well 1,280 acres or more. Eight miles above Huron a well is used on a farm that produced 53 bushels and 20 pounds in wheat to the acre, as against 15 bushels in the unirrigated land of the neighborhood.

Some who profess to know say that the great basin is inexhaustible, and that the opening of one well near another does not affect the first one. Then, again, I read that this is not wholly true. But, at all events, no one doubts the presence of a vast body of water, and no well, even among those that are five years old, shows any sign of giving out. A law called the Melville Township Irrigation Law, approved on March 9, 1891, authorizes townships to sink wells for public use, and to issue bonds to defray the cost. This aims to make the mysterious basin the property of the people. For farming, the flow of water is not needed during half of each year. It is said that if the subsoil is wet, the crops will need no more water. The water should be turned on to the land after the harvest, and kept soaking into it for four or five months. The drilling of wells goes on apace. In one County, where there were eight wells a year ago, there will be 100 this Summer.

The James River Basin is 400 miles long and 40 to 50 miles wide. Well-boring has been a failure to the eastward of it, but to the westward there are several splendid wells, some even as far away as Hughes County, near the Missouri. The boring is very costly, some wells having cost $5,000, and even more. At first a soft shale rock of white sand is pierced, and then there is reached a sticky clay like gumbo. Minnows of brilliant colors and with bright and perfect eyes have been thrown out of these wells, as if to prove that the water comes from surface streams somewhere. The theory is that its course is from the west, and an official of the Department of Agriculture holds that several rivers to the westward lose all or part of their volumes of water at certain places where they meet the outcropping of this same sandstone which is found by boring. The Missouri, for instance, is said to lose two-thirds of its bulk after its flight over the cascades at Great Falls. The Yellowstone diminishes mysteriously in bulk. Three or four streams in the Black Hills run their courses and then disappear in the neighborhood of this outcropping of sandstone. When I was at Great Falls, in Montana, I was not able to prove that the Missouri loses the greater part of its bulk below there, but it was said that engineers have investigated the subject, and are to report upon it to the Government. I was told, however, that several streams which seem to be heading toward the Missouri in that neighborhood suddenly disappear in the earth without effecting the junction.—*Harper's Magazine.*

Sunday in a Hungarian Village.

When we came into the village bright and early Sunday morning everybody was in holiday dress. The red petticoats of the matrons flashed along the sidewalks, but half shaded by the small trees; groups of gay maidens, each with wild flowers in hand, hurried along to church, where companies of men in immaculate linen and stiff embroidered coats stood in solemn rows like supernumeraries on a stage. The church was already partly full when we entered, and there was a bustle of many people settling themselves in their places, and a constant stream of worshippers coming in at different doors. We sat there marveling at the strange dresses, enchanted by the brilliant colors, all the while unable to realize that this was the customary weekly ceremony, not a dramatic pageant arranged for our benefit. The sexes sat apart, and the married and the single each had a portion of the pews reserved for them, and each entered the church by a different door. Near the altar the marriageable maidens came clumping in with their red boots, always in parties of three or more, each with a little bright-colored rug, a prayer-book, and a bunch of flowers. Spreading out their rugs on the stone floor, they kneeled down in rows facing the altar, and after carefully arranging their pleated Sunday chemises so as to cover their feet, remained a few moments in the attitude of prayer, and then rose and took their seats. Of all that great congregation there was not one who did not wear the costume, and with the exception of some of the ornaments and finer textiles, all the articles of dress were of home production. Every thread of the linen and wool had been spun on the busy distaff as the women went to and from the fields to their work, and woven in the Winter-time, when the clatter of the loom is heard in every house.

During the sermon we hurried away to be present at the close of the church service in the neighboring village of Bezdan, inhabited by Magyars. It was a few miles away, and we arrived only in time to see the quiet streets enlivened with people totally different in type and dress from those we had just left. In the flickering shadow of the trees, under the noonday sun, the women strode off homeward with an energy of action that made their stiff petticoats balloon out still more. Near the church the men gathered in silence to listen to the crier who was announcing various articles for sale. The unmarried girls of the village wear white linen dresses with short sleeves and embroidered waists, wreaths of flowers in their hair, bright red ribbons down their backs, black stockings, and dainty red and yellow slippers. The matrons wear colors, sometimes green or black, but usually red, and the men are chiefly noticeable for their loose linen garments and elaborate boots, often with a survival of the spur in the shape of a brass ornament on the side of the heel. Even as we stood watching the people the streets became quite deserted again, and so we hastened on to another village, where, in the populous Servian quarter, we caught our first glimpses of Oriental life in the groups of women sitting flat in the road in the shadow of the houses, disdaining, like true Orientals, all such luxuries as chairs and tables, and disturbed by no horror of dirt. Our Sunday's excursion also included a gypsy settlement—not a common sight, for these people are seldom permitted to occupy houses. It disagreeably contrasted in its squalor and filth with the perfection of neatness and tidiness among the Schokatzs and Magyars, but gave us a notion of the range of types easily studied in this one neighborhood.—*Harper's Magazine.*

COULDN'T PUT ON STOCKINGS.

Story a Southern Woman Tells that Will Astonish Yankee Girls.

"I didn't even know how to put on my own stockings," said an aged Virginian lady, "until after I was 12 years old.

"People at the North, and especially those of the younger generations, have no idea how thoroughly dependent the women of the South were upon their slaves. We allowed ourselves to be waited upon as if we were helpless infants.

"When I was a girl, if I wished a drink of water, someone poured it out and held the glass to my lips while I drank. If I wished my chair moved, even a foot, I rose up and said so, and someone sprang to move it.

"If I attempted to do the slightest thing for myself, which I rarely did, there would be a remonstrance from the colored girls: 'Now, Miss Fanny, yo no need do dat. Yo father got plenty us niggers with nuffin else to 'tend to.'

"When I look back upon it now I wonder sometimes that it did not make us imbeciles.

"When I was 12 years old I went to a convent school near Baltimore. My mother brought my maid with her, and she saw me safely in bed. But the rule of the institution forbade any pupil to have a maid, and the girl went home that night with my mother.

"Next morning, some time after the rising bell rang, one of the sisters appeared at my door. 'It is time now for you to get up,' said she.

"'But I can't get up,' I replied.

"'My dear child,' said she, 'are you ill?'

"'Why, no,' said I; 'but no one has come to raise me up and put on my stockings.'

"She actually had to show me how to put on my stockings, and then my slippers. Further, it required some persuasion on her part before I could lift the pitcher and pour out the water to wash myself, and so on, until I was ready to go down stairs.

"Now this was not ill-will, you understand, but childish ignorance. I had never done any of these things for myself, and didn't know how."

A Money-Losing Operation.

When a Southern farmer uses his cotton seed as a fertilizer he simply throws away $26 with every ton that he puts on the ground. He could buy an equally good fertilizer for $21 a ton, and make $47 a ton out of his cotton seed by feeding it to his cattle, and get besides their manure, which will have a large proportion of the fertilizing constituents of the seed. The sign-board to prosperity reads: Get cattle—high-bred, not scrubs—enough to eat all your cotton seed, and sell it as beef, milk, butter, or cheese, and let them help fertilize your land.

CHARACTERISTICS OF INSECTS.

A Brief Description of the Different Orders—Their Generation, Habits, and Lives.

BY C. V. RILEY, M. A., PH. D.,
Honorary Curator of the Department of Insects, United States National Museum.

[From advance sheets of a work to be published by the Smithsonian Institution.]

THE TERM "insect" comes from the Latin *insectum*, and signifies "cut into." It expresses one of the prime characteristics of this class of animals, namely, that of segmentation. This feature of having the body divided into rings or segments by transverse incisions is possessed by other large groups of animals, and was considered of sufficient importance by Cuvier to lead him, in his system of classification, to group with Insects, under the general term Articulata, Worms, Crustacea, Spiders, and Myriopods. Worms differ from the other four groups in having no articulated appendages, and in having a soft body-wall or integument instead of a dense chitinous* covering, and are separated as a special class *Vermes*. The other four groups of segmented animals possess in common the feature of jointed appendages and a covering of chitinous plates, and are brought together under the term *Arthropoda*. The division of the body into a series of segments by transvere incisions, characteristic of these animals and these only, justifies the use of Cuvier's old name, Articulates, as this segmented feature represents a definite relationship and a natural division—as much so as the vertebral column in Vertebrates. The Cuvierian name should be retained as a co-ordinate of Vertebrates, Mollusks, etc., and the terms Vermes and Arthropods may be conveniently used to designate the two natural divisions of the Articulates.

The term "insect" has been employed by authors in two different senses—one to apply to the tracheated animals or those that breathe through a system of air tubes (tracheæ), comprising Spiders, Myriopods, and insects proper or Hexapods,† and the other in its restricted sense as applied to the Hexapods only. To avoid confusion, the latter signification only should be used, and it will be thus used in this article.

We see, then, that insects share, in common with many other animals, the jointed or articulated structure. Wherein, then, do they differ? *Briefly, in having the body divided into 13 joints and a subjoint*, including the head as a joint, and in the adult having six true, jointed legs, and usually, though not always, wings. The five classes of Articulates differ from each other in the number of legs they possess in the adult form, as follows: Hexapoda, six legs; Arachnida, eight legs; Crustacea, 10–14 legs; Myriapoda, more than 14 legs; Vermes, none. This system holds for the adult form only, because some mites (Arachnida) when young have only six legs, and many true insects in the larva state either have no legs at all, or have additional abdominal legs which are not jointed, but membranous, and are lost in the perfect or adult state. These are called false or prolegs.

It will serve to make these instructions clear if I at once explain that the life of an insect is marked by four distinct states, viz, the egg, the larva, the pupa, and the imago, and that the last three words will constantly recur. We have no English equivalent for the words larva and pupa, for while some authors have written them with the terminal *e* so as to get the English plural, yet "larves" and "pupes" so shock the ear that the terms have not been (and deserve not to be) generally adopted.

We have seen that an insect in the final state has six true legs. Yet even here many species depart from the rule, as there are many in which the perfect insect, especially in the female sex, is apodous or without legs, just as there are also other cases where they are without wings. Sometimes the legs seem to be reduced in number by the partial or total atrophy of one or the other pair, but in all these exceptional cases there is no difficulty in realizing that we have to deal with a true insect, because of the other characters pertaining to the class, some of which it will be well to allude to.

Insects are further characterized by having usually three distinct divisions of the body, viz., head, thorax, and abdomen, and by undergoing certain metamorphoses or transformations. Now, while a number of other animals outside of the insect world go through similar transformations, those in the Crustacea being equally remarkable, yet, from the ease with which they are observed and the completeness of the transformations in most insects, the metamorphoses of this class have, from time immemorial, excited the greatest curiosity.

SCOPE AND IMPORTANCE OF ENTOMOLOGY.

But few words are necessary to indicate the importance of entomology, especially to the farming community; for while insects play a most important part in the economy of nature and furnish us some valuable products and otherwise do us a great deal of indirect good, yet they are chiefly known by the annoyances they cause and by the great injury they do to our crops and domestic animals. Hence some knowledge of insects and how to study them becomes important, almost necessary, to every farmer.

*Chitin.—A white, amorphous, horny substance, forming the harder part of the outer integument of insects, Crustacea, and various other invertebrates.—WEBSTER.

†From the Greek hexamous, having six feet.

The scope of the science may best be indicated by a statement of the number of species existing, as compared with other animals. The omnipresence of insects is known and felt by all; yet few have any accurate idea of the actual numbers existing, so that some figures will not prove uninteresting in this connection. Taking the lists of described species, and the estimates of specialists in the different orders, it is safe to say that about 30,000 species have already been described from North America, while the number of species already described or to be described in the Biologia Centrali-Americana, *i. e.*, for Central America, foot up just about the same number, Lord Walsingham having estimated them at 30,114 in his address as President of the London Entomological Society two years ago, neither the Orthoptera nor the Neuroptera being included in this estimate. By way of contrast the number of mammals, birds, and reptiles to be described from the same region is interesting. It foots up 1,937, as follows:

Mammals, 180; birds, 1,600; reptiles, 157.

If we endeavor to get some estimate of the number of insects that occur in the whole world, the most satisfactory estimates will be found in the address just alluded to, and in that of Dr. David Sharp before the same society. Linnæus knew nearly 3,000 species, of which more than 2,000 were European, and over 800 exotic. The estimate of Dr. John Day, in 1853, of the number of species on the globe, was 250,000. Dr. Sharp's estimate 30 years later was between 500,000 and 1,000,000. Sharp's and Walsingham's estimates in 1889 reached nearly 2,000,000, and the average number of insects annually described since the publication of the Zoological Record, deducting eight per cent. for synonyms, is 6,500 species. I think the estimate of 2,000,000 species in the world is extremely low, and if we take into consideration the fact that species have been best worked up in the more temperate portions of the globe, and that in the more tropical portions a vast number of species still remain to be characterized and named, and if we take further into consideration the fact that many portions of the globe are yet unexplored, entomologically, that even in the best worked up regions by far the larger portion of the Micro-Hymenoptera and Micro-Diptera remain absolutely undescribed in our collections, and have been but very partially collected, it will be safe to estimate that not one-fifth of the species extant have yet been characterized or enumerated. In this view of the case the species in our collections, whether described or undescribed, do not represent perhaps more than one-fifth of the whole. In other words, to say that there are 10,000,000 species of insects in the world, would be, in my judgment, a moderate estimate.

The following is a brief discussion of the characteristics, habits, number of species, and importance of the several groups:

Order Hymenoptera (*hymena*, a membrane; *pteron*, wing). Clear or Membrane-winged Flies: Bees, Wasps, Ants, Saw-flies, etc. Characterized by having four membranous wings with comparatively few veins, the hind part smallest. The transformations are complete; *i. e.*, the larva bears no resemblance to the perfect insect.

FIG. 4.—Bald-faced Hornet, *Vespa maculata*. (After Sanborn.)

Some of the insects of this order are highly specialized, and their mouth parts are fitted both for biting and sucking, and in this respect they connect the mandibulate and haustellate insects. The common Honey-bee has this complex structure of the mouth, and if the editors of our agricultural papers would bear the fact in mind, we should have less of the never-ending discussion as to whether bees are capable of injuring fruit at first hand. The lower lip (*labium*) is modified into a long tongue, sheathed by the lower jaws (*maxillæ*), and they can sip, or, more properly speaking, lap up nectar; while the upper jaws (*mandibulæ*), though not generally used for purposes of manducation, are fitted for bitting and cutting. The Hymenoptera are terrestrial, there existing only a very few degraded, swimming forms.

This order is very naturally divided into two sections—the Aculeata and Terebrantia. The aculeate Hymenoptera, or Stingers, comprise all the families in

FIG. 5.—An Ichneumon Parasite, *Pimpla annulipes*, showing male and female abdomen.

FIG. 6.—A Chalcid Parasite, *Chalcis flavipes*.

which the abdomen in the female is armed with a sting connected with a poison reservoir, and may be considered the typical form of the order, including all the social and fossorial species. The insects of this section must be considered essentially beneficial to man, notwithstanding the occasional sting of a bee or wasp, the boring of a carpenter bee, or the importunities of the omnipresent ant. Not only do they furnish us with honey and wax, but they play so important a part in the destruction of insects injurious to vegetation that they may be looked upon as God-

appointed guards over the vegetal kingdom—carrying the pollen from plant to plant, and insuring the fertilization of dicœcious species, and the cross-fertilization of others; and being ever ready to clear them of herbivorous worms which gnaw and destroy. The whole section is well characterized by the uniformly maggot-like nature of the larva. The transformations are complete, but the chitinous larval covering is often so very thin and delicate that the budding of the members,

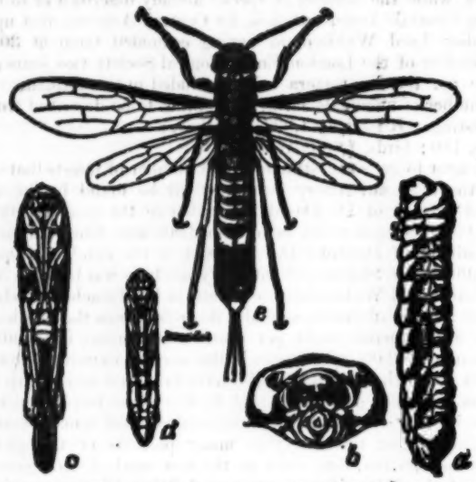


FIG. 7.—A Horn-tail, *Tremex columba*. *a*, larva, showing Thalessa larva attached to its side; *b*, head of larva, front view, enlarged; *c*, female pupa, ventral view; *d*, male pupa, ventral view; *e*, adult female—all slightly enlarged.

or gradual growth of the pupa underneath, is quite plainly visible, and the skin often peels off in delicate flakes, so that the transition from larva to pupa is not so marked and sudden as in those insects which have thicker skins.

The terebrantine Hymenoptera, or Piercers, are again divisible into two sub-sections: first, the Entomophaga, which are, likewise, with the exception of a few gall-makers, beneficial to man, and include the parasitic families and the gall-flies; second, the Phytophaga, comprising the Horn-tails (*Urocerida*) and the Saw-flies (*Tenthredinidæ*), all of which are vegetable feeders in the larval state, those of the first family boring into trees, and those of the second either feeding externally on leaves or inclosed in galls. They are at once distinguished from the other Hymenoptera by the larvæ having true legs, which, however, in the case of the Horn-tails, are very small and exarticulate. The larvæ of many Saw-flies have, besides, prolegs, which are, however, always distinguishable from those of Lepidopterous larvæ by being more numerous and by having no hooks.

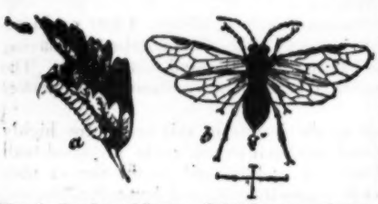


FIG. 8.—Sawfly and Larva. *Pristiphora grossulariæ*; *a*, larva; *b*, imago. (Walsh.)

Order Coleoptera (*koleos*, a sheath; *pteron*, wing). Beetles or Shield-winged Insects. Characterized by having four wings, the front pair (called *elytra*) horny or leathery, and usually united down the back with a straight suture when at rest, the hind ones membranous and folded up under the elytra when at rest. Transformations complete.

FIG. 9.—A Chafer, *Cotalpa lanigera* (After Packard.

This is an order of great importance, and in the vast number and diversity of the species comprised in it outranks any of the others. The ease with which the insects of this order are obtained and preserved make it one of the most attractive to the amateur, and beetles are, perhaps, of all insects, the best known and understood in the popular mind. For the same reason they have, in the perfect state, received most attention from the entomologists, but their transformations and preparatory forms yet offer a wide and inviting field for the student. The simplest

FIG. 10.—A Longicorn, *Saperda candida*. *a*, larva; *b*, pupa; *c*, beetle.

and best-known classification of the beetles is the tarsal system, founded on the number of joints to the tarsi, by which we get four great sections: (1) Pentamera, in which all the tarsi are five-jointed; (2) Heteromera, with the four anterior five-jointed and the two posterior four-jointed; (3) Pseudotetramera, with apparently only four joints to all the tarsi, though, in reality, there is a fifth penultimate joint, diminutive and concealed; (4) Pseudo-trimera, with apparently only three joints to all the tarsi. This system, like most others, is not perfect, as there are numerous species not possessing five joints to the tarsi belonging to the first section; and for practical purposes beetles may be very well arranged according to habit. We thus get, first, the Adephaga, or carnivorous species, including all those which prey on other living insects, and to which, following Mr. Walsh, I have, for obvious reasons, applied the suggestive term "Cannibal;" second, the Necrophaga, comprising those which feed on carrion, dung, fungi, and decaying vegetation; third, the Phytophaga, embracing all those feeding on living vegetation. This arrangement is by no means perfect, for there are beetles which are carnivorous in the larva and herbivorous in the imago state; while some of the Necrophaga are actually parasitic. Yet, it is not more artificial than others which have been proposed. The carnivorous species, broadly speaking, are *Pentamerous*, the only striking exception being the Coccinellidæ (Lady-birds), which are *Pseudo-trimerous*. The carrion-feeders are also *Pentamerous;* but vegetable-feeders are found in all the tarsal divisions, though the *Pseudo-tetramera* are the more essentially herbivorous, and consequently the most injurious.

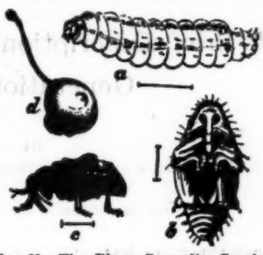


FIG. 11.—The Plum Curculio, *Conotrachelus nenuphar*. *a*, larva; *b*, pupa; *c*, beetle; *d*, plum showing egg-puncture and crescent.

FIG. 12.—A Soldier-beetle. *Chauliognathus pennsylvanicus*. *a*, larva; *b-h*, parts of larva enlarged; *i*, beetle.

Order Lepidoptera (*lepis*, a scale; *pteron*, wing). Butterflies and Moths, or scaly-winged insects. Characterized by having four branching-veined membranous wings, each more or less densely covered on both sides with minute imbricated scales which are attached by a stalk, but which easily rub off, and appear to the unaided eye like minute particles of glistening dust or powder. Transformations complete.

FIG. 13.—The Bogus Potato-beetle, *Doryphora juncta*. *a*, eggs; *b*, larvæ; *c*, beetle; *d* and *e*, parts of beetle enlarged.

Next to the Lepidoptera, the Coleoptera are, perhaps, most familiar to the popular mind. Everyone admires the beauty of these frail creatures, dressed in every conceivable pattern, and adorned with every conceivable color, so as to rival the delicate hues of the rainbow, and eclipse the most fantastic and elaborate designs of man. When magnified, the scales, to which this beauty of pattern and color is entirely due, present all manner of shapes, according to the particular species or the particular part of the individual from which they are taken. According to Lewenhoeck, there are 400,000 of these scales on the wing of the common silk-worm.

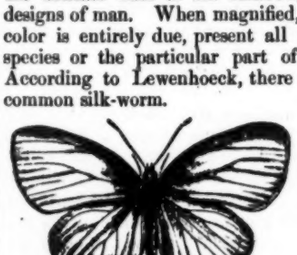


FIG. 14.—A Butterfly, *Pieris oleracea*.

FIG. 15.—A Sphingid, *Ampelophaga myron*.

The transformations of these insects are complete, and the changes are usually so sudden and striking as to have excited the wonder and admiration of observers from earliest times.

The more common form of the larva is exampled in the ordinary caterpillar—a cylindrical worm with a head, 12 joints and a sub-joint; six thoracic or true legs, four abdominal and two anal prolegs. But there is a great variety of these larvæ, some having no legs whatever, some having only the jointed legs, and others having either four, six, eight, or 10, but never more than 10 prolegs. With few exceptions they are all vegetable-feeders, and with still fewer exceptions, terrestrial.

FIG. 16.—A Moth, *Utetheisa bella*.

[To be continued.]

PROGRESSIVE AGRICULTURE.

The Most Recent Discoveries, Developments, and Ideas in the Science of Farming.

Consumption of Sugar in the United States.

IT IS doubtful whether the progress and advancement of civilization of a country may be measured by the amount of and character of the food consumed; nevertheless, it must be admitted that the amount and character of the food are in some respects to be taken as a criterion of material progress. There are certain articles of consumption which march with equal step with progress in civilization which means also progress in agriculture. The consumption of salt, of soap, and similar articles may be cited. In a much greater degree will the consumption of sugar and allied bodies mark the progress of a race in its material development.

In 1880 the consumption of sugar, per capita, in the United States amounted to 42.7 pounds. In 1890 it amounted to 56.5 pounds; an increase of more than 14 pounds per head in 10 years. With the advent of free sugar a phenomenal increase in consumption is noted. The consumption during the year 1891, during which there were nine months of free sugar, amounted to 69.4 pounds per head, an increase of almost as much in one year, namely, nearly 13 pounds, as there had been during the preceding 10 years. At the present time the United States consumes as much sugar per head of population as England does, and there is every reason to believe that the rate of consumption in this country will soon surpass that of England.

Seventy pounds of sugar per head per annum means an immense quantity of that staple article of food, and yet this does not include the sirups, honeys, confections and other sweets used by our people.

During the year 1891 the number of long tons of sugar consumed in the United States was 1,983,139, equivalent to 4,442,231,360 pounds. The amount of sugar imported into the United States during the year 1891 was 3,483,477,222 pounds, valued at $105,728,216. Of this amount 2,824,482,842 pounds, valued at $87,495,939, were cane sugar, and 658,994,380 pounds, valued at $18,232,277, were beet sugar.

The amount of sugar produced in this country during 1891 was as follows:

Cane sugar	806,680,000 pounds.
Maple sugar	49,280,000 "
Beet sugar	12,006,000 "
Sorghum sugar	1,376,800 "

making a grand total of domestic product of 571,332,800 pounds.

The domestic product is therefore about 13 per cent. of the whole consumption.

From these figures it will be seen that there is yet much to be done in this country before we even begin to supply our domestic demands for sugar. There is no other branch of agricultural industry where there is such an opportunity of development without any danger of overstocking the market. In the most favorable conditions of progress our farmers may not expect to see the markets overstocked with domestic product in 50 years. This is a matter of the greatest importance to our agricultural interests. We already see a market overstocked with cereal products. The growers of cotton have agreed among themselves to limit the amount produced in order that the price received may pay the cost of production and leave a small profit for the planter; and the same is true of almost every product of our farms. There is more produced than finds a ready market. It would seem, therefore, the part of wisdom on the part of our farmers if they should turn their attention largely toward the production of sugar, an article which is now as much of a necessity in the household as flour or meat, and yet one for which we are dependent for 87 per cent. of the amount consumed upon foreign countries.

Another interesting feature of this economic problem is found in the condition of the countries from which our sugars are imported. It is found that the beet-root sugar has almost completely monopolized the markets of Europe. As a result of this the United States receives almost the whole production of tropical countries devoted to the production of cane sugar. More than two-thirds of the amount of cane sugar imported into this country comes from the Island of Cuba, and the rest of it from tropical countries where the necessities of life require the purchase of very little of the products of our country. The result is that the balance of trade with the sugar-producing countries is strongly against the United States, and there is, therefore, a continual drain upon our resources for the sugar entering our ports. With a reciprocal trade it would not be a matter of any grave moment. If Cuba were taking from the United States sixty or seventy million dollars worth of products every year, we could look with equanimity upon taking sixty or seventy million dollars worth of sugar from that island. But so long as the balance of trade is strongly against us it is a lasting menace to our agricultural industries, as well as our economic policy, to continue a system of economic development which makes us so entirely dependent upon a country which is so little dependent upon us.

As has already been indicated in these columns, there are certain lines of agricultural development open to us by means of which we may be relieved of the necessity of the dependence above mentioned. Yet when we look at the figures given by the official reports of the Treasury we see that there is very little encouragement so far to hope for relief.

In regard to the quantity of maple sugar produced, it is not reasonable to expect that any considerable increase shall take place in the production of this article at all commensurate with the increase of population and the increasing demand for sugar.

Beet sugar has now been manufactured in this country at intervals for more than 20 years and continuously for 12 years; yet we are humiliated in the confession of finding but six beet-sugar factories in operation in the United States during 1891.

The progress of the sorghum sugar industry has been even more discouraging. After 15 years of endeavor we find a paltry 570 tons produced in 1891.

The quantity of cane sugar produced in this country is greatly increasing. The last year reported, namely, 1890, '91, was a phenomenally good one, and the quantity of sugar produced was the largest in post-bellum days, and very nearly reached the quantity produced during the most favorable seasons of ante-bellum days. Yet the increase in the production of cane sugar in Louisiana and other Southern States does not begin to keep pace with our increase of population and increased consumption per head. It is a condition, therefore, not a theory, which we have to face. We have a rapidly-increasing population; the quantity of sugar which each of our inhabitants consumes increases every year, and since the introduction of free sugar there has been a phenomenal increase in this amount. Our domestic production, it might be said, is increasing in arithmetical progression, while our consumption is increasing in geometrical progression. Thus there is an ever-widening chasm between the amount of sugar produced in the United States and the amount consumed.

What is the remedy? This is a matter for grave consideration by those who have our agricultural interests at heart. Under the influence of the bounty offered by the National Government, there must be a careful study of this problem by capitalists as well as agriculturists. If capitalists could be convinced that this offer of a bounty was of a synallagmatic character, and binding upon the United States for the term of 15 years, there is no doubt whatever that there would be such an influx of capital into the sugar manufacturing industry as to completely close the gap between domestic production and domestic consumption.

It is thus seen that it is something of a political character which stands between the production of sugar in this country and its consumption. One of the great political parties inaugurated the system of domestic bounty; the other political party is now in control of legislation. If the year passes, therefore, without any hostile legislation on this subject, both political parties in this country will be committed to the doctrine of the bounty on domestic product. There would then be no longer any hesitation on the part of capitalists, and I believe there would be an abundant supply of money in readiness to develop in the highest degree possible the domestic production of sugar. If, therefore, for the next 15 years we could continue the normal increase in the production of cane sugar, and secure a product of 500,000 tons of sorghum sugar, the problem would be solved. Those who have at heart the progress of our agricultural industries should use every possible endeavor to secure such a result.

Adulteration of Sugar.

It is a question of interest, both to consumers and producers, to know whether sugars exposed on the market are pure. The Department of Agriculture has lately made an extensive study of this subject, in which an attempt has been made not only to determine the character of adulterants used but the extent and scope of the adulteration.

For this purpose 1,000 samples of sugar were purchased in open market in various parts of the United States and subjected to examination. The result of this examination is eminently satisfactory. It was found that there is no adulterated sugar on the markets of this country; in other words, that there was no admixture with sugar of any other material not sugar for the purpose of debasing the product, cheapening its cost, and defrauding the purchaser. It must not be supposed, however, from this statement that all the sugars on the markets are of equal purity. This is not claimed either by manufacturers or dealers.

The sugars now offered for sale in this country may be divided into three general classes, namely, pure sugars, including granulated, loaf, and powdered sugar; second, coffee sugars, including sugars white or nearly white, of slightly yellowish color, but containing a considerable quantity of moisture and molasses; third, brown or yellow sugars constituting the lowest grade of sugars offered for sale. None of these sugars was found to have any adulterants except those naturally present in the lower products, namely, molasses and water. It is well known that the lower grades of coffee sugar and brown sugar sell for a less price than the pure sugars, and hence there is no fraud of any perceptible nature upon the consumer in this respect.

A few years ago an attempt was made to adulterate sugar, which was then worth 10 cents a pound, with grape sugar made from corn starch, which was worth only about three cents a pound. Large quantities of this sugar were thrown upon the market under the name of "new process" sugar; it, however, did not attain a general consumption. The grape sugar attracted moisture, made the mass sticky and lumpy, and the grocers found it impossible to handle this article. To avoid this a pure anhydrous grape sugar was supplied, which, in character of crystals and color, was quite equal to the granulated sugar; but the cost of this article was about the same as that of the pure granulated sugar, and hence there was no inducement to use it on a large scale.

By modern methods of sugar boiling a great deal of low-grade sugar and molasses can be incorporated in low-price sugars and still the color be almost pure white. This is accomplished by the combined influence of bone-black, which is

used for decolorizing a sugar, and vacuum-pans, in which the boiling can be accomplished at a very low temperature. By boiling sugar at a low temperature, namely, 115° to 120° Fah., a soft crystal is formed which is capable of holding a 90 large percentage of water and molasses. Such sugars usually contain from 85 to per cent. of pure sugar, and are sold at correspondingly lower prices. The question of the use of such sugars is therefore one of economy only, for they are certainly not injurious to health.

In regard to maple sugar, there is a general impression, which is probably true, that it is largely adulterated with cheaper varieties. Unfortunately, at the present time, the resources of chemistry are powerless to detect such adulteration. The sugar of the maple sap is identical in composition with that of the sugar-cane, sorghum, and sugar beet; no discrimination in such cases can be made by analysis. An extract of hickory bark is found to contain a flavoring matter which resembles very closely that of maple sugar, and such extract is used largely, or has been used largely, in the manufacture of maple molasses out of brown sugars.

A more practical point to consumers of sugar is in regard to the coloring matters which are sometimes used in the manufacture of high-grade sugars. White and yellow sugars usually receive a special treatment either when they are in the vacuum-pan in the process of boiling, or afterward in the centrifugal, where they are dried. This treatment is used to give a bright and lustrous appearance to the crystals and to avoid a gray or dead appearance. For brightening white sugars a wash of ultramarine, a deep blue color, is the substance usually employed. The coloring matter is suspended in water, and is applied in the centrifugal just before the drying is completed. A very small amount of the color adheres to the crystals, and this, strange as it may seem, gives the sugar a bright and white appearance. Fortunately, ultramarine is not poisonous, and no injury to health may be feared in the use of sugars which have been blued. Nevertheless, this process may be carried to excess, and I have seen a number of samples of sugar which when dissolved in water would give a very blue-appearing scum. This is an abuse of the privilege of bluing, which of course should not be allowed.

Yellow sugars are often colored with a wash containing chloride of tin, commercially known as tin crystals. The tin salt is mostly washed away in the centrifugal, but it is possible that a mere trace of tin may still adhere to the sugar crystals, which of course would be objectionable. The greatest danger, however, from using tin in washing sugars is in the subsequent use of the molasses, for the whole of the tin solution would be found in the molasses except the minute portion which may adhere to the crystals. All the various sugar colors, such as sell as "rock compound," "Smith's sugar color," etc., are composed chiefly of chloride of tin. The method in which tin acts upon the sugar is not clearly understood, but it seems to form a trace of caramel of deep yellow color which adds much to the beauty of the crystals. In England one of the most fashionable sugars is known as "Demerara crystals," and this sugar is made by treating the large crystals obtained in boiling with chloride of tin. Oil of vitriol was formerly used for this purpose, but its use has now been superseded by the tin chloride above mentioned.

The term "open-kettle sugar" is applied to a low-grade yellow sugar made in Louisiana chiefly by old-fashioned processes. The juices, after extraction in a mill, are boiled in open iron or copper kettles either by applying a flame directly to the bottom or by the use of steam coils. This sugar has a fine flavor and deep yellow color, and is much in demand for cooking and other purposes. It is, however, not used extensively on the table.

Yellow clarified sugar is a product which has been made largely in Louisiana, and is very highly prized for table use. A few years ago it was produced largely on all plantations in the State. It found ready a market without passing through a refinery. The delicate yellow color which it possessed was imparted by treating the juices with sulphur fumes before boiling. After the crystals were formed in the vacuum-pan they were washed with a solution of chloride of tin to brighten their color. Since the change in the fiscal policy of the Government in regard to sugar duties and the installation of the bounty, yellow clarified sugars are made in much less quantities than before, it being found more profitable to make a raw sugar and sell it directly to refineries.

In general, it may be said to the consumers of sugar that they need not fear that they are buying an adulterated article; but on all sugars, with the possible exception of some of the highest grades, they may expect that some material has been used, such as the bluing before mentioned, or chloride of tin, or some other substance for improving the appearance of sugars, and thus furthering their sale.

Raw beet sugars, that is those which have not been refined, are not suitable for table sugar on account of the large amount of alkaline salts which the beet juices contain, and which can only be removed after complete clarification and refining. On the other hand, low-grade cane sugars are of fine flavor and suitable for both table and culinary purposes. It is believed that the public taste could soon be educated to the use of a natural yellow cane sugar which had not been subjected to the refining process. It has a delicate flavor of the cane, presents no danger of being contaminated with any impurities of bone-black, and has not been washed with any substance which would tend to add an objectionable ingredient to it.

The Refining of Sugar.

It will be of interest in this connection to say a few words in regard to the methods employed in refining sugar.

There is an increasing public demand for sugars which appear to be pure white. This demand, as has been intimated above, is probably to be regretted; nevertheless it exists, and of course it is to the advantage of the manufacturer of sugar to encourage such a public taste, because refined sugars can be sold at a higher price than raw sugars, and the profit of refining thus secured.

The process of refining is a simple one, and yet can only be carried on successfully on a large scale. The whole of the refining industry of this country is now under the charge of one corporation, which is known as the American Sugar Company, legally, and as the Sugar Trust in common speech. This company now controls the refineries in Portland, Boston, Brooklyn, New York, Baltimore, New Orleans, St. Louis, and Chicago. With the exception of one or two small refining houses, the product of which plays no role whatever in commerce, all the refined sugar of the United States is made under the control of this corporation and in eight or ten large houses. While raw sugars are imported into this country free of duty, the law imposes a tax of one-half a cent a pound on refined sugar. This is an ample margin for profit, as the refining of sugar does not cost to exceed one-eighth to one-quarter cent a pound. The profits, therefore, of the American Sugar Company are something phenomenal. It levies a tax of perhaps one-quarter or one-eighth of a cent a pound, for there is certainly one-eighth of a cent a pound clear profit on every pound of refined sugar consumed in the United States.

Raw sugars when brought to refiners are melted and strained through bags to remove all insoluble particles. The sirup is then decolorized by passing it through tanks filled with bone-black.

Bone-black is prepared by burning bones and other animal tissues in closed retorts until all the organic matters are driven off or carbonized. It is therefore a mixture of phosphate of lime, a natural constituent of bone, together with the carbon produced from the organic matter—blood, flesh, etc.—which the bones contain, or which may be added in the retorts. The bones are then ground into fragments of convenient size, and in this state they have the power of oxidizing and destroying coloring matters of an organic nature. When a sirup, therefore, is passed through a layer of bone-black it emerges perfectly free from all color, and resembling water as far as appearance is concerned. After bone-black has been used for some time it loses its decolorizing power, which is restored by reburning it in closed retorts. Before it is reburned it is usually washed with acid to remove any carbonate of lime which may be formed, and then with water, and afterward placed in closed retorts and heated for some time to a red heat. In this way bone-black, which is a costly substance for which the manufacturer pays perhaps $80 a ton, may be used a great many times. Finally, however, it loses its power of decolorization entirely, and then it is sold for fertilizing purposes. After decolorizing the sirup is drawn into a vacuum-pan where it is boiled to sugar.

A vaccuum-pan is an apparatus designed for the purpose of boiling a solution at a high vacuum and a low temperature. Air is removed from the pan by means of a vacuum-pump, and as the pressure of the atmosphere is removed the temperature at which the liquid will boil becomes lower. At ordinary atmospheric pressure water will boil at 212° Fah., and a strong sugar solution will boil at 220° to 230° Fah. After the pressure of the air is removed the boiling point of a strong sugar solution may be reduced to 115° or 120° Fah. At this temperature there is no danger of scorching the sugar, and hence the white color of the sugar is retained.

The sugar crystallizes in the pan while boiling, and fresh portions of sirup are added from time to time as the crystals grow to the required size. On being removed from the pan they are sent at once to the centrifugal, where the molasses which they contain is thrown out by centrifugal motion, and where the wash which is applied to brighten the crystals is used. If granulated sugar is made, the sugar as it passes from the centrifugal machine is passed trough a revolving drum heated with steam, which entirely dries the sugar and produces the granulated sugar of commerce. Loaf sugar is made by having molds in the centrifugal in which the soft sugar is cast and dried.

While the process of refining appears to be simple, as above described, yet the cost of the machinery is very great, and it is only by working on a large scale that refining can be accomplished at the low rate mentioned, namely, about one-eighth to one-quarter of a cent a pound.

The concentration of the refining interests in the hands of a single company gives it the power to regulate prices within the limit between free sugar and the half a cent a pound duty levied on refined sugar. In other words, the Sugar Trust has it in its power to charge the consumer the difference between the cost of imported refined sugar, paying a duty of half a cent a pound, and the cost of the raw sugar. Whatever economy, therefore, can be practiced in the cost of refining will enable it to make the greater profit on the sugar sold.

The remedy for this would be the establishment of independent refineries, but all that have been established heretofore have sold out sooner or later to the Trust, since it was not found profitable to try to carry on the business against such a powerful organization. If our people would learn to use the yellow sugars, however, which have not been to a refiner, they would not only get a better article, so far as taste is concerned, but also a much cheaper one, and live independent of the machinations of any corporation.

The Hottest Place in the World.

"The hottest I ever saw it," said an old sea Captain, "was one August in New York City. The thermometer in my cabin stood at 100°.

"That's just it," he went on. "People think it must be terrible hot in the tropical cities. But in the seaports under the equator the temperature rarely rises to 100°. It holds steady at 90°, or a little more, all Summer long.

"They don't have it, as we do, insupportably hot for three days and then cool and comfortable for the next three. The average temperature is higher, but the variation is less."

SUGAR-BEET CULTURE.

The Soil, Climate, and Methods Best Calculated For Success.

BY WALTER MAXWELL, DEPARTMENT OF AGRICULTURE.

IV.

OUR last article upon the subject of Sugar-Beet Culture contributed to THE AMERICAN FARMER was devoted to methods of planting the seed and to considerations and past actual experiments, which came in as expressly opportune in connection with that stage of the work. In the present article we shall treat of the work of "light cultivation," which comprises all the operations necessary to the health, growth, and development of the beet, and for the actual preparation of the crop for the factory.

This year the planting has been very generally delayed by the extreme lateness of the season and the unpropitious character of the weather. Nevertheless, the planting has already commenced, and a considerable quantity of seed is already in the ground. Where the ground is not excessively wet, nor the temperature of the soil extremely low, the seed will germinate quickly, and the young plantlets will very soon appear above the ground.

The first act of light cultivation commences as soon as the beet plantlets are sufficiently through the ground as to indicate the rows. Where the ground is in a fine state, and moist, without being wet, and the temperature not under 50 degrees, the lines of the rows will be visible after 10 days from the date of planting. In a rough, clotty ground, with little moisture, the seed will come up slowly and very irregularly, which is a false start, and it will be seen through the whole history of the crop. The first act of cultivation is the movement of the ground between the rows. That operation is conducted with hand hoes, or with horse hoes, made for the work, and the application of hand or horse power is determined by the state of the ground and the measure of regularity of the beet plantlets in the rows. If the plantlets have come up all together, and with moderate regularity, and where the ground is fine and fairly dry, the horse hoe may be used with safety and advantage. But where the plantlets have appeared in only odd places along the rows, and the ground is rough and clotty, or very wet, great care must be exercised. The horse hoe would roll the rough soil particles upon the plantlets just coming through the ground, or where the ground was wet the trampling of the horse would do incalculable damage at that period in the work. Hand hoeing, or "flat hoeing," as it is called, is in all cases the best practice the first time. When the plantlets are small and delicate, and where the conditions of the soil and of the germination of the seed are such as we have stated, hand hoeing cannot be substituted by the use of the horse hoe.

It must be understoood that the act of moving the soil between the rows by the hand or horse hoes is not to be delayed because the weeds have not made their appearance, or because the weeds are still "too small to do any damage." The act of hoeing has two great purposes, viz., the preventing or stopping the growth of the weeds, and, likewise, the loosening of the surface soil and letting in of pure air to the plantlets. In all cases a surface soil becomes compact, and after a heavy rain, followed by a hot sun, the surface layer is frequently found too much baked and compact for the plantlets to make further growth. In such an instance as the latter hoeing should be done without delay.

The "flat hoeing" is done with hoes having a blade eight inches wide. Two strokes with a hoe of that width will most effectually remove a breadth of soil between the rows 15 inches in width; and where the rows are drilled 18 inches apart, as we advised in our last article, all the space between the rows would be hoed up, excepting one and a half inches at each side close to the line of plants. Now, that is as close as the hoe should go to the plants. The motion of the hoe at that short space from the rows will amply loosen the soil actually attached to the plantlets, and to go closer would disturb the frail root-system of the plants and deter their growth. Where the horse hoe is employed the blades of the implement should be set in order not to approach within two and a half inches of the rows.

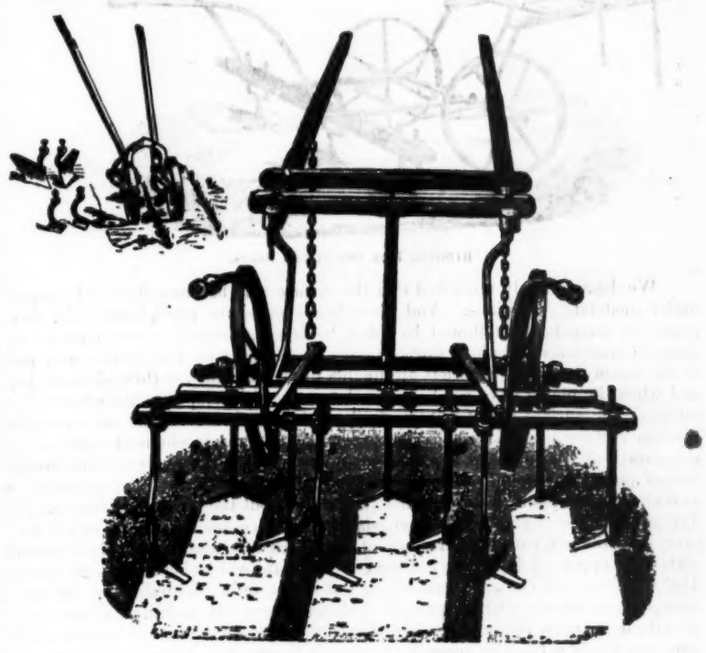
The horse-power implements used in the work are constructed to take one, two, three, or four rows. The number of rows which it is advisable to attempt to cover is regulated by the form of the land and the condition of the soil. If the field is generally level, and the particular plat planted with beets has been thoroughly cultivated, so that no unevenness of surface is left, the implement may be set to take three or four rows. Unless, however, the ground is level, as we have described, and it is attempted to cover more than one, or, at the most, two rows at a time, the hoe will skim over the surface in some places, and go in too deep in others. The depth to which the hand or horse hoe should go in the first hoeing should be one and a half inches, and in no case should exceed two inches.

If the ground is very compact, or the weeds are inclined to be very rank, it is excellent practice, after the flat-hoing by hand, to go over the same ground immediately with the horse hoe. Such an operation not only loosens the whole surface soil, but it effectually checks the progress of the weeds until the plants have gotten well ahead, and have become ready for the "thinning out" process.

The operation of thinning out, or removing the surplus plants from those which are left standing to produce the crop, is the most particular act in the whole work of light cultivation. The distance at which the plants should be placed from each other was treated of in our last article, and it is exclusively the act and method of separation which we now wish to speak of.

When the plants have so far developed that they have put forth broad leaves, which, on an average, will require about 14 days from the time of their coming through the ground, they are ready for thinning out. However, it is extremely inadvisable to be in too great a hurry to commence the work of separation. If the plantlets are still very young and small, and it is attempted to separate them, the plants which should remain are in danger of being disturbed in their connection with the soil, even if they are not actually pulled out. Now, each young plantlet is attached to the soil by its leading tap root, and by a system of delicate fibrils. If it is disturbed to a great degree by the act of removing the surplus plants its tap root becomes detached from the soil, and it not only becomes detached, but the root is actually ruptured and separated from the fine root cap or sheath which protects the root as it makes its descent into the lower earth. When the tap root becomes damaged, in the way described, it ceases to perform its full and leading function. It is the axis of the beet organism, and the body should aggregate around it. When it is damaged, and more or less disabled, the organism puts forth other large roots, or certain of the fibrils become developed into roots, and the consequence is that a beet is produced, which, instead of having the one central, leading root, it possesses three, four, or five crooked prongs. Now the whole form of the beet is distorted, its sugar-forming function impaired, and the organism ruined for propagation uses. It has been observed by careful beet-growers that when young beet plants are drawn out of the ground by force and transplanted the tap root most generally ceases to develop its normal form, and that instead, crooked fingers or prongs are put out and the organism is a distortion. All these observations contribute to show the extreme care that should prevail in the act of "thinning out;" care in determining the precise time, or period in the plants' development, when the separation should begin, and the act of separation itself.

SMALL POWER HOE.



HORSE-HOE FOR SUGAR BEETS.

The work of thinning out is done either by hand or with a narrow hoe made for the purpose. The separation of the plants exclusively by the hand is a tedious, crude, and costly operation. It is an actually annoying sight to see a great number of men and boys, and even women, down upon their knees drawing out the surplus plants with one hand and holding the plant which has to be left with the other. The expense of such a mode of separation, however, will soon compel the adoption of some other.

The hoe which is employed in thinning out has a blade not exceeding four inches in width. The distance at which the plants are left from each other is from six to eight inches. If there is a full plant, and the plants are standing regularly along the rows, a man with the hoe cuts out all the surplus plants at the determined distances. There will be, however, after the chief surplus has been cut out, as already stated, still two, three, or more plants standing in a bunch with the one plant which is selected to be left. When the workman has become skilful in the use of the hoe he will very seldom require to apply his hand to separate those remaining plants from the one to be left. With his eye trained to observe the differences in the plants, he immediately detects the largest and the one best worth leaving, and by a ready manipulation of the hoe, with a corner of the blade, he sorts out the selected plant, presses it slightly from the others with the back of the blade, and then cuts out the surplus ones by a forward motion of the hoe. Very considerable skill and much practice are required in order to reach the degree of expertness of which we speak. It is observed, however, amongst the beet work-

men of France and Germany, and to great perfection amongst the laborers in England, who perform the same operation in the turnip, mangoldwurzel and beet crops in that country. It requires nothing more in the way of skill than our laborers will become capable of.

In addition to the modes of thinning out by hand and with the hoe, it is not infrequently attempted to accomplish that operation very chiefly by the use of the horse hoe in European countries. The horse hoe is furnished with blades five inches in width, and the blades or knives are set about three inches from each other. The hoe, arranged in that form, is drawn over the field at right angles with the rows. As a consequence, the great bulk of the plants are cut out of the rows at the distances indicated by the hoe, whilst small bunches are left in the lines of the spaces existing between the blades. After the horse hoe, men, women, or children go and thin out further those bunches, leaving one plant.

It is absolutely essential to the practicability of the method of thinning out of which we have just spoken that the land be quite level, and the beet stand full and regular. And even with the latter conditions, the method cannot be compared in its results with the mode of separation by the hoe. The horse hoe pursues a straight and undevious course, and takes no heed of the best plants, but cuts up good or bad just as they happen to stand. Where labor is scarce and dear the horse hoe has to be used for thinning out. But it is bad practice.

When the operation of thinning out is completed, the following operations consist of hoeings and horse-hoeings, in order to keep down all weeds, and to promote a constant movement of pure air amongst the growing plants in the upper layer of the soil. At this place in our considerations, we must again insist upon the values of a constant movement of the upper soil layer by hoeing and horse-hoeings until the foliage of the crop becomes too large for the operations to be further possible.

Ridging Hoe for Sugar Beets.

We have already remarked that the surface soil becomes close and compact under moderate conditions. And when heavy rains are precipitated, and those rains are immediately followed by a hot, baking sun, the effect is to form a very compact crust over the whole surface; so compact and hard that in the early part of the season the young plantlets are unable to pierce their way through to the top, and when the plants have reached a further stage of development the solid incrustation of the surface very forcibly retards their growth. It is not only essential that the surface soil be kept loose in order to remove the mechanical resistance to the growth of the plants, it is physically necessary to promote a constant circulation of pure air through the soil particles of the plant bed. The processes of assimilation and plant growth are not possible without the presence of free oxygen. The great source of the free oxygen supply is the common air. In order, however, that the air can have free access to the seat of operations of plant growth within the upper soil layer, it is indispensable that the soil be kept loose and porous. The circulation of the air in the upper soil is not only essential to the chemical changes and processes which precede and accompany all assimilation and plant growth, it replaces the sourness which is common to unmoved soils with a wholesomeness which is likewise necessary to vegetable growth. Upper soil cultivation accomplishes much more rapidly for the surface layer what subsoiling and draining does for the subsoil; it induces the passage of air currents, which means the replacement of acid matters and gases by pure air.

There is, moreover, another value belonging to surface cultivation in addition to the prevention of weed growth and the promotion of an air circulation in the upper soil. It is popularly believed that a hard and compact soil-surface prevents, or lessens, at least, the loss of moisture from the inner soil by evaporation. That has been proven over and over again to be a fallacy. The escape of moisture from the earth is carried on by the passage of the water from one soil particle to the particle adjoining just as a liquid will creep up a strip of cotton, and that movement is called capillarity. It is, however, essential to an active capillarity that the soil particles are lying very closely together and undistured. A constant movement of the soil surface by harrowing, or horse-hoeing, disturbs the final capillarity of the surface soil, and thus prevents the ready escape of the inner moisture of the soil. It will be remembered that, in a former article, we spoke of the value of compressing the surface of the soil by rolling in order to induce the rising of moisture to the seed bed, which would promote a more hasty germination of the seed in a dry season. The purpose, in part, of light surface cultivation is to produce the opposite result.

The value of a liberal movement of the surface soil is considered so great and certain that it is not confined to the cultivation of the beet crop. In England we are aware that it is esteemed excellent practice to harrow and hoe all kinds of cereal crops; and we have seen a heavy harrow put over fields of Winter wheat, beans, oats, and barley. Now, the object of using the harrow on cereal crops in that country is less to check the growth of weeds than to open up the soil surface and promote a free circulation of air in the upper layer.

As it was observed, the work of light cultivation, after the thinning out has been completed, consists of hand hoeing amongst the plants in the rows and the repeated use of the horse hoe between the rows. The narrow-bladed hand hoes which were used for thinning out must be used in the operation of hoeing amongst the plants as they become larger. The eight-inch blade, which was used for flat-hoeing, would be too broad for the purpose, and would destroy the plants. The shares or blades of the horse hoe must not be set too wide, otherwise the developing root system of the growing beets may be seriously damaged. In no case should the hoe blades approach within two inches of the plants.

Thus, the work of light cultivation amongst the plants proceeds until the foliage has become so large that the ground cannot further be seen, and continued work with the hoes would do damage by injuring the leaves. When the plants have approached the state of development when further operations would do more harm than good, the final operation is made. The last act in the work of cultivation consists of hoeing or "ridging" up the plants in the rows.

That operation may be performed by the use of the broad-bladed hand hoe. The operator walks down between the rows and draws the loose mold, which has been prepared by the use of the horse hoes, close up and around the plants, and until no portion of the root of the beet remains visible. The operation of ridging up the rows is very necessary to the production of beets of a high sugar quality; and it has been frequently observed that the top part of the beet which stands above the surface of the soil, and is exposed to the light, does not contain as much sugar as the portion which is within the ground. In fact, the upper part, when it has been long exposed to the action of the sun, becomes green in color, and resembles much more approximately the leaves in their nature and composition. All the green-colored part of the beet is usually cut off with the tops, or leaves, at the time of harvest and is rejected as worthless for factory purposes.

Ridging up the rows is likewise performed by a horse power "ridging hoe," where large tracts have to be gone over, and that implement performs its work as effectively as the hand hoe when properly managed. Care has to be taken, when using the implement, that the beets are not too much covered with soil, otherwise, in such case, the neck of the beet is induced to decay by an excess of moisture being retained near that part of the organism. When the ridging operation is completed, the crop is left to the care of nature until the harvest.

An Indian Legend.

The Indians of Lapush, Wash., have a legend that they came here in their canoes from a land unknown to them to-day. There was a great flood, and the land they occupied was submerged and they took to their canoes. For many days they were near famished for food and water. Then they sighted the unknown land that is now their favored home. Iron, gold, and silver were unknown to them. They wore no clothes except a few that were made of skins. Some skilful ones made small pieces of blankets of feathers and dog's hair. The dogs were a species of wolf. They made canoes of cedar trees. It took two good workmen two moons to cut down a tree and four moons to finish the canoe. The instruments used were muscle shells.

They kept them sharp on stones. These shells were used as knives, spoons, axes, chisels, and for general use, the best known to the nation. They used knots that they could pick up in the forest where old trees had decayed as wedges to split cedar trees for boards. The boards were finished with muscle shells. Stone hammers were used to drive the knots as wedges. There are some canoes and some boards here now that were made before they knew the use of steel tools; these are old, and few of them of little use. They are very fond of horses, though they never saw one till brought here by white men. They knew the art of making fire. They used a dry fir stick a little larger than a lead pencil; they held it perpendicular and rolled it back and forth between their hands, with the lowest point resting on a hard substance on which they had some tinder.

The friction caused it to ignite. They had no kettles, yet they boiled their food. They scooped out a small place on the ground, placed a skin over it for a dish, and put water and food in it. They heated stones in the fire and put them in their pot, which they say made it boil very nice.—*Seattle Telegraph.*

The Sunflower.

The average person, seeing the gaudy sunflower towering above its sister flowers, little knows of the various uses to which this common flower may be put, or the great profit arising from its careful and extensive cultivation. The oil obtained from the seeds is used for various purposes. An acre yields about 1,400 pounds of seeds, which, at the average price of one and one-half cents a pound, brings about $20. The profit is much greater where the grower of the seed himself converts it into oil. The seed can be sown broadcast or in rows, and the plants, when partly grown, should be thinned so as to stand about one and one-half feet apart. The sowing should be done in the Spring, and the harvesting in September or October. The heads are cut off as soon as they have ripened, and then the seeds are beaten out by whipping the seed cups one by one with a stick. Fans separate the chaff, and after sorting and drying the seed is ready for the mill. It is estimated that 20,000,000 pounds of oil, valued at $1,000,000, were produced in 1888. Most of this was kept for home consumption. The sunflower cakes, made from the oil of the seeds, are largely exported, about 96,000,000 pounds having been sent to England, Denmark, and Germany in 1889. In this country the cakes are fed to horses and fowls, and they fatten upon it.

INOCULATION FOR HOG CHOLERA.

The Deadly Character of the So-Called Discovery—More Fatal than the Disease Itself.

HARVY AUSTIN.

WE HAVE just had an opportunity to examine an advance copy of a "Farmers' Bulletin" of great importance, now being issued by the Department of Agriculture, which has for its title "Results of Experiments with Inoculation for the Prevention of Hog Cholera." Its author is Dr. D. E. Salmon, the Chief of the Bureau of Animal Industry. This bulletin not only contains the full account of the experiment at Ottawa, Ill., for testing the value of inoculation, an early report of which was printed in THE AMERICAN FARMER a few weeks ago, but it has much new matter in regard to the experience with inoculation as tested on farms. A very valuable part is the letters from farmers giving the results of inoculation as practiced upon their own hogs or among the herds of their neighbors.

The attempts to prevent hog cholera by inoculation are made on the principle that one attack of a contagious disease generally protects the affected individual from subsequent attacks of the same disease. The degree of protection varies, however, with different diseases and different animals.

Inoculation in practice consists in producing a mild attack of disease by injecting under the skin as much of the strong virus of hog cholera as can be given without producing a fatal attack of the disease. The virus is the same in variety and strength as that found in animals dying of the plague. Inoculation differs from vaccination in that in the latter case a mild virus is used which cannot produce fatal results. Although vaccination with attenuated virus prepared in several different ways has been tried by the Bureau of Animal Industry, no successful method has been discovered.

Inoculation is the simplest method that can be used with any degree of certainty for producing a mild form of this disease. By giving a first dose of four to 10 drops of cultivated virus, enough protection is secured to permit of a second dose of four to 12 times this quantity being administered. While animals twice inoculated are able to resist the contagion better than those which have not been inoculated, the experiments of the Bureau show that when exposed to severe outbreaks the greater part of them will still contract the disease and die.

The fact that a slight degree of immunity can be conferred by this operation has led unscrupulous parties to claim the discovery and to greatly exaggerate the protective effects. To make two inoculations on the same animal was found too expensive and troublesome, so the operators administered the virus but once, and in order to get a noticeable effect increased the dose beyond the limit of safety. The protection obtained in this way was uncertain and of little practical value, but worse than this the fatal disease was often caused among inoculated hogs and those exposed to them.

The champion of inoculation has been Dr. F. S. Billings, of the Nebraska Experiment Station, who has persistently advocated this practice in the most unqualified terms during the last four years. In this he has been supported by the authorities of the Nebraska University and by a portion of the agricultural press. He has denounced the officials of the United States Department of Agriculture in the most violent and discourteous language, because they did not advise farmers to adopt inoculation and were inclined to point out its disadvantages and dangers. As a private individual, his unmannerly writings would not be worthy of notice; but coming with the prestige that is inseperably connected with an important official position, indorsed by a university and by influential newspapers, his power for mischief is tremendous, and it is none too soon that Secretary Rusk has caused the matter to be thoroughly investigated and the misrepresentations exposed.

Billings himself at first admitted that inoculation stunted the hogs, spread the disease, and was not a practical means of prevention. But, apparently feeling the necessity of showing some practical returns for the money expended on his investigations, he attempted to demonstrate that he could prevent hog cholera by this means. He made the experiment on a grand scale, inoculating over 1,000 hogs, and with the most disastrous results.

An attempt was at first made to cover up the losses, but this did not succeed. One man, who had 260 head inoculated, published a letter stating that the operation had killed all but 40, and that these would also die. Other newspaper articles appeared, giving additional particulars, and Billings was led to make a statement, in which he acknowledged the losses, but endeavored to explain them away, on the theory that the animals were infected before inoculation.

The correspondence published in this bulletin shows that this explanation is untenable, except possibly in one or two cases. The large herd mentioned above was free from disease when inoculated, and did not show it until eight or 10 days afterward. This is the usual time in which sickness appears when caused by inoculation. Out of 1,014 hogs known to have been operated upon at this time, at least 463 are shown to have died out of four herds in which disease appeared. In spite of these losses, inoculation was continued with no better results, as is demonstrated by more than 40 letters from farmers, many of whom were the victims of misplaced confidence.

It is also shown that the hogs which survived the operation were not protected from the effects of exposure to sick hogs. John Reddy reports eight inoculated hogs exposed—all became sick and seven died. S. C. Bassett reports five exposed, of which three died. Fred Lucas tells of seven exposed—all becoming sick and three dying. P. O. Avery reports a herd of 25, which took sick 60 days after inoculation, three-fourths of which died. J. M. Bennett put three inoculated hogs with sick ones—all sickened and two died. E. J. Currier had 133 hogs, which took cholera from a second inoculation, 70 of which died. These facts and others show that the hogs which survived the inoculation received no practical benefit from it.

The opposition to Billings in Nebraska, on account of the dismal failure of the one practical discovery which he claimed as the result of his three years' investigation, was such that he resigned his position in the Experiment Station and undertook to make a fortune out of farmers by inoculating their hogs for 50 cents per head. His plans were announced in the most grandiloquent language imaginable. He would form a live-stock insurance company, which was going to do business on a mammoth scale. It would be no clap-trap concern, founded on the visionary lines of heretofore live-stock insurance companies, which brought ruin to all concerned, excepting, of course, the sharpers running the scheme. He would insure hogs on condition that they were inoculated with virus of the disease prepared at the laboratories of the company. He was willing to "take his own medicine" and suffer the consequences. His money and that of his friends would "talk to the tune of half a million or over"; and as they all were "in for the dollars," it did not seem to him that preventive inoculation needed "the indorsement of the chief of the bureau of animus intensified." And so on *ad nauseum*.

The ridiculousness of these bombastic utterances become apparent when we learn that their author never had the courage to insure the hogs which he inoculated, and that he soon after published the following in his circulars:

"It must be distinctly understood that we do not warrant or guarantee anything. As in vaccination, the owner must accept the results, whatever they may be.

"No one but an arrant fraud or quack would warrant or guarantee that which neither he nor anyone else can invariably control."

What a sudden and complete change of policy and principle. But he still claimed inoculation to be a great success.

He now endeavored to show that hogs fed in distilleries could be protected from cholera by inoculation, but admits that 50 per cent. of his hogs so exposed died. He then, with his friends, undertook to run a large feeding establishment in connection with the glucose works at Davenport, Iowa, the central point of the plan being the protection of the hogs from disease by inoculation. In connection with this there was the same valiglorious boasting as before. He announced that "the Government swine plague has no terrors for us." The operations were begun on a scale which invited disaster even if his inoculation had been successful. A contract was made to feed 40,000 hogs a year. An agent was sent out to buy and inoculate 4,000 hogs at the very beginning.

The scheme went up like a rocket and came down like a stick. It was the most disastrous of all his experiments. The hogs nearly all contracted hog cholera, many, as was believed, from the inoculation, and within a few months it was necessary to abandon the whole undertaking.

The remarkable thing in connection with this was not that the establishment failed, but that the man who had proved so often the visionary character of his plans, who had shown his recklessness in imperiling the property of others, and the unreliability of his conclusions, should be recalled to Nebraska to introduce and popularize inoculation. And this was what was done by the authorities of the Nebraska Experiment Station.

He had no sooner returned to Nebraska than he began his misrepresentations in regard to the results of inoculation. He asserted that it was perfectly safe, a sure preventive, and so simple that any farmer could practice it for himself. He claimed that thousands of hogs were being inoculated without the loss of a single animal. He called on Secretary Rusk, in column after column of open letters, to send a man to Nebraska to witness his wonderful success. He named the man he wanted to make the investigation, however, and would have no one else. The Secretary has had too much experience to be caught by that kind of a trap, and quietly waited for his opportunity.

When Dr. Billings delivered his lecture at Ottawa, Ill., last November, Dr. Salmon was on hand representing the Department of Agriculture, and made a proposition to test his claims by an experiment to be made under the supervision of a committee of farmers. After trying to delay the experiment in various ways, the advocates of inoculation were at last forced to inoculate their portion of the hogs or confess their fear of the results. The experiment was made, and, as shown by the report heretofore published in THE AMERICAN FARMER, what was said by Billings to be impossible was what actually occurred. The hogs were given the disease by his inoculation, and this disease spread to the other hogs, the same as in ordinary outbreaks. His whole theory broke down on the first actual test, and he was shown to be either grossly ignorant of the subject or deliberately deceptive in his teachings.

He now attempted to explain away the Ottawa test by asserting that the hogs were not inoculated according to his instructions; and stated that of thousands inoculated by him in Nebraska not one had to his knowledge been injured. An examination of the facts, however, did not sustain this statement. A portion of the hogs at Ottawa had been inoculated strictly in accordance with his instructions, and these were also fatally infected with hog cholera by the operation.

The results of the inquiries in Nebraska are truly astounding when compared with the claims of success which had been so freely and positively made. Almost the first herd inoculated was that of the State farm which Billings had under his

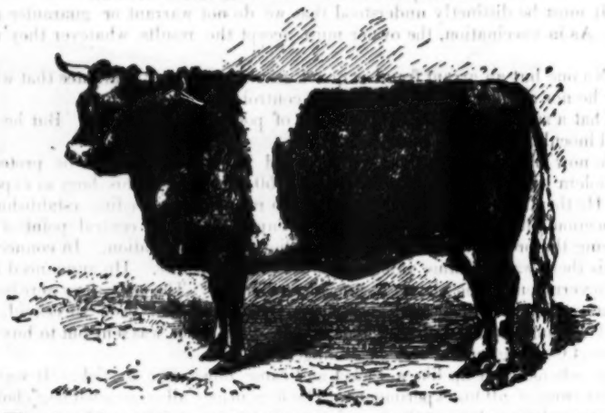
immediate control. It consisted of 52 head, 48 of which were inoculated on the 12th of August. In 18 days four were dead and two others, past recovery, were taken to Billings's laboratory for examination. Of the 48 inoculated 38 died, and of the four not inoculated three died, making a total loss of 41 out of 52.

An investigation, which from the nature of the case could not be complete, shows a loss of over 10 per cent. following the inoculations on farms in Nebraska made in 1891. The loss from all diseases among the hogs of the State at large for the same year is given by the Statistician of the Department of Agriculture as only 4 per cent. That is, the losses among inoculated herds was at least two and one-half times as much as among uninoculated herds.

Where, then, is the evidence of success in preventing hog cholera by inoculation? It does not exist. The farmers have been deceived into the use of a method of prevention which is more dangerous than the disease they were endeavoring to guard against. In many instances they have introduced disease by this method and lost the greater part of their hogs. Who is responsible for this deception? Does not the responsibility rest equally with the authorities of the Nebraska Experiment Station and University who have so freely indorsed Billings and his methods, and with the editors of agricultural papers who have declared inoculation to be a success after it had failed so many times?

Inoculation from the first has been a failure. There is no excuse for intelligent men to decide otherwise. To publish an indorsement of it is to mislead the reader. It is evident that this bulletin of the Department of Agriculture is a timely publication, and we advise our readers who are interested to apply at once to Secretary Rusk for a copy.

Queen Victoria's Prize Ox.



The above is a picture of the Short Horn ox belonging to Queen Victoria, and which took the prize at the Birmingham Fat Stock Show, in the class of steers between three and four years old. He afterward took the Elkington silver cup as the best beast exhibited, and still later took first prizes in several classes at the Smithfield Cattle Show. He was bred on the Queen's model farm; his sire was Duke of Edinburg, and dam Augusta VII. He is a handsome beast, very broad over the back, and full of thick, rich flesh. At 1,311 days old he weighed 2,402 pounds, thus showing a daily gain of one pound and thirteen and a half ounces.

Amazon Troops of Dahomey.

M. Jean Bayol, who two years ago was the Governor of the French settlements now threatened by the Dahomeyans, and who spent several days at Abomey, the Capital of King Behanzin, has just published in the *Revue Scientifique* interesting particulars about the army of Dahomey. He says that everybody is a soldier in that country. Military service is obligatory for every able-bodied man. The contingents, or reserves, called to Abomey at the season when the King undertakes the "razzias," or raids, destined to secure subjects for the annual human sacrifices and the slave market, are incorporated into permanent cadres or regimental formations.

The King is the supreme chief of the army; sometimes he delegates his power to a "gaon," who then assumes the command. During the celebration of the "contumes," a kind of national holiday, the King makes distributions of food and clothing. There are at Abomey 14 depots or headquarters of regiments; one of them is called the "Musselman regiment." In the same "contumes" holiday the King's herald makes the roll-call for the troops, and the soldiers answer with the word "Soledo," which means "We are ready for war."

M. Jean Bayol estimates at 10,000 or 12,000 men the number of the regular soldiers living at Abomey or in the camps along the frontier. The contingents, or levies, called from every part of the country to join the regular troops, amount to 10,000 men, which gives for the army a grand total of from 20,000 to 22,000 men. To these must be added the famous Amazons, who serve as a body guard to the King.

It has been said that the Dahomey tyrants had an army of women in their palace, because the people there call these women soldiers "minos," which means "our mothers." But this appellation should not be applied to them any more than to that of Amazons. This guard of the King is distinct from harem, and the women composing it have made a vow of celibacy. The Amazons are recruited from among the children of the chiefs, or the captured girls. Their uniform consists of sleeveless vest, a short pantaloon over which is a "pange," or small petticoat, and a bonnet upon which is embroidered an animal, usually a crocodile.

There are about 1,500 of the Amazons, divided into two battalions, that of Gougbe and that of Agodojige, both of them always united under the command of a woman famous for her exploits. The Amazons accompany the King in war, but never engage in battle except on his special order. They are courageous, and even ferocious.

The armament of the Dahomeyans is not uniform. Every kind of firearms is to be found in their ranks, from the long "Buccaneer guns" of the old Burmingham make to the ancient Spanish espingole and the old French cavalry carbine. There are also, at Allada and Abomey, some old cannon without their carriages. When they have to be used in military expeditions they are carried on the shoulders of men under sentence for infidelity. The natives, however, would instinctively prefer the cutlass and the bludgeon, which they use with terrific effect. They are well trained physically by gymnastics, marches, and dancing. They are vigorous, of high statue and warlike. M. Bayol thinks that since he left Dahomey the armament of Denhanzin's troops has been much improved. He is said to possess 3,000 good guns, mostly Sniders, sold to him by the German firms of Toga and Whydah; and has also, probably, a few small Krupp cannon

Ancient Chinese Etiquet.

How Chinese women were expected to behave themselves 2,000 years ago is set forth in an ancient Chinese work in 313 chapters, of which samples have been translated into English by Miss A. C. Safford. According to this voluminous manual, the first duty of a Chinese wife in those primitive times was to "reverence her husband as heaven." If his life is in danger she must not hesitate to die for him. Among the many little stories told in the book is one of a peasant who, during a severe famine, was seized one day by some starving soldiers, who intended to make a meal of him. His wife pleaded for him. "My husband is very lean," she said; "he will scarcely be a mouthful for you. I am fleshy and of dark complexion, and they say that the flesh of such persons is excellent eating." The hungry soldiers, we are told, were convinced by this sound argument, and ate her instead of her husband. As to deportment, "in the presence of her parents or parents-in-law, a woman may not sneeze or cough, neither stretch, yawn, or loll about when tired, nor may she presume to stare at them. She should wear a happy face and a mild, pleasant deportment in serving them, in order to soothe them." The wife of a certain Liu Kung-tseh comes in for a large share of praise simply because "for three years after her marrriage nobody had ever seen her smile."—*San Francisco News Letter.*

Walking in a Circle.

The fact that people lost on a desert or in a forest invariably walk in a circle is due to slight inequality in the length of the legs. Careful measurements of a series of skeletons have shown that only 10 per cent. had the lower limbs equal in length; 35 per cent. had the right limb longer than the left, while in 55 per cent. the left leg was the longer. The result of one limb being longer than the other will naturally be that a person will, unconsciously, take a longer step with the longer limb, and consequently will trend to the right or to the left, according as the left or right leg is the longer, unless the tendency to deviation is corrected by the eye.

The left leg being more frequently the longer, as evidenced by measurement of the skeleton, the inclination should take place more frequently to the right than to the left, and this conclusion is quite borne out by observations made on a number of persons when walking blindfolded. Further, on measurement of the arms, it is found that in 72 per cent. the right arm is longer than the left; while in 24 per cent. the left arm is the longer—showing that a considerable majority of persons are right-handed and left-legged. The inequality in the length of limbs is not confined to any particular sex or race, but seems to be universal in all respects.—*Pearson's Weekly*

The Teeth.

The proper names or designation of the teeth may be learned by a child in five minutes, yet a multitude of generally intelligent people go through life with no better method of designating any particular member of the dental family than by opening the mouth and placing the end of a finger upon the offender. Beginning at the center of the adult jaw, the mouth which is fully equipped contains four sets of eight teeth each; and as these sets correspond, one side of either jaw may be taken as an object lesson. Each set contains two incisors, one cuspid, two bicuspids, and three molars, in the order named, beginning at the front. The first incisor is known as the central, the second as the lateral; the cuspid, if in the upper jaw, is familiarly known as an "eye-tooth," in the lower jaw, as a "stomach-tooth." The bicuspids are simply called the first and second; while the molars are known as the "six-year," "twelve-year," and "wisdom teeth," respectively. Add the designations, right or left, upper or lower, and any tooth can be instantly and unmistakably specified. A half-dozen other semi-technical terms in this connection may be frequently found useful. The labial surface of the teeth is that toward the lips; the buccal, that facing the cheek; the lingual, that next the tongue on the lower jaw; the palatal, that facing the roof of the mouth. The approximal surfaces are those facing neighboring teeth; of these the distal being those facing from the center, the mesial those looking toward the center of the jaw.—*Hall's Journal of Health.*

THE CORK OAK.

An Article of Rapidly-Increasing Value—Can It Be Produced in this Country?

THE demand for cork is rapidly increasing, and it is constantly being put to new uses. There is twenty times as much of it used now as at the beginning of the present century, and the supply is not increasing with the demand. Nothing has been found to take its place, though in bottling other means are used, such as glass and rubber.

Manufacturers are beginning to fear that unless the cork plantations are managed with more care and attention, there will be a great scarcity of this useful article; for the world's supply is limited to the few countries lying along the Mediterranean.

Now, the United States has room and climate suited to its cultivation, and since we grow our own supplies of everything else, why not cork? One objection is that the cork tree is not ready to be stripped until it is from 15 to 30 years old, and most of our busy farmers, bent on utility of space and quick profits, are not willing to wait so long for a crop.

The largest supplies are exported from Spain and Portugal. Some years ago France laid out extensive plantations in her Algerian provinces, under the management of a large and efficient staff of officers of the Corps of Forest Engineers, and these trees now yield an immense revenue to the State.

It is only within the present century that the best uses of the cork tree have been appreciated. Not very long ago, in Spain and France, the trees were cut down and used for fuel, as they were not good for lumber; and the peasants lined their houses and the soles of their shoes with it, owing to its imperviousness to water. Also, in Sardinia acres of trees were destroyed to obtain the tannin from the bark, and their branches were burnt, that the carbonate of soda contained in the ashes might be extracted.

Inquiries made at the Department of Agriculture, bearing upon its introduction into this country, show that in 1862 a large number of acorns were imported and distributed, but little or nothing has been heard of them since. A barrel of acorns lately arrived from England, but they were all dead on reaching here. Mr. Saunders, Superintendent of Grounds, says that, in order to keep them any length of time, they must be packed in charcoal or in hermetically-sealed boxes, as they, as well as all acorns, are perishable. He thinks they will grow almost anywhere in the Southern States.

For the benefit of those who may be induced to try cork raising, a brief account of the cork oak (*Quercus suber*), together with some hints on its planting and cultivation, are given. The latter are taken mostly from an Agricultural Report, and may, therefore, be considered reliable.

In Europe the tree is found as far north as the 45th degree of latitude, and has been grown with some success in England. It requires a warm, or at least a temperate, climate, and is found in Spain at an altitude of 1,600 feet; and at the same hight in France according to some authorities, and according to others at 2,600 feet. A southern exposure is most favorable to its growth, though if other conditions are suitable it does well in other situations. If near the sea or directly on the coast it prefers slopes to plains, for it may then have free circulation of air and an abundance of light, both of which are essential to its development. The minimum average temperature which it can stand is about 13 degrees centigrade—about 55 degrees Fahrenheit.

It does not grow in damp or marshy lands, but flourishes in slaty and granite soils. In the Spanish provinces it abounds wherever granite, silurian slates, or sandy silicious grounds are found.

When the seed is planted the soil does not need deep tillage. During the first few years of the tree's growth it needs some shelter, but if this is too great it droops and dies. Hence the different results obtained from any one or other of the different various methods of planting. The "furrow" or "belt" system has been generally adopted for the sake of economy, and to protect the young trees from a growth of weeds and shrubs. This is to plant them in rows with one or more rows of grape vines between them. This plan has been tried with such success that the yield of the vines more than paid for the cost of the cork plantation.

Cork Tree—Cutting Bark.

If the surface of the ground and subsoils are very much impacted or full of thick roots, ditching is recommended. To do this ditches from eight to 20 feet in width and about the same depth are opened from 15 to 40 feet apart. They should be dug in the Summer or Autumn, in order that the soil be exposed to the action of the air for at least half a year. When it is time to plant the soil should be thrown back in the ditches and the operation is complete.

The most favorable time for the plant to germinate is in the Autumn when the acorns fall, but at this time the birds and field mice are apt to confiscate them for their Winter stores. There is an objection, also, to planting in the Spring, because there is danger of injury from the late frosts, but of the two the latter is the lesser evil. As a protection to the young plants, other seed are sometimes mixed with the acorns, such as the cereals. It is said that in Gascony pine seed is used, and that the sea pine grows luxuriantly there by the side of the cork tree.

In transplanting, great care should be taken to equalize as nearly as possible the absorbent surface of the roots with the exhalant surface of the leaves. Spring or Summer is the best time for this. If in taking up the tree any of the roots should be bruised or broken, they should be cut off, as they might rot and injure the tree. Of course the trees should be transplanted as soon as possible after being taken out of the ground, and the roots should be covered with moss or straw, if they are to be carried to a distance.

Cork Leaf and Acorn.

In digging holes for the trees, they should be made large enough to admit the roots without their touching the sides, and a slight hollow filled with water should be left around each tree after planting.

The tree begins to bear acorns within 12 to 15 years after planting, but the acorns are not fertile until from 30 to 40 years. They are edible and something like the chestnut. As a rule trees are not stripped oftener than once in 10 years. Sometimes the new layer is allowed to grow as long as 18 years, and the quality is then thought to be finer. If the trunk is stripped every eight or nine years, the thick branches should be stripped every 10 or 12 and the lesser ones every 16 or 20.

In removing the cork from the tree, an ax, the helve of which is wedge-shaped at the end, is used. Two circular cuts are made, one at the foot of the trunk and one at the proper hight above. A longitudinal cut is then made, and after its edges are gently beaten with the ax, the whole piece is easily taken off by means of the helve. These layers are then dampened and pressed between weights to make them perfectly flat; they are afterward cut into strips.

In stripping the tree, great precaution is taken not to wound any part of the inner bark, for then no new supply is produced on the places so injured until they are entirely healed over. If all the cork be taken from the tree at once the new is produced more slowly, but it is of better quality than when only partially stripped. The trunk should be stripped to the ground, because if a belt is left it forms a covering for ants and other insects, which damage the tree.

Bottle corks are sometimes cut by hand with a sharp knife. A cutting machine is also used in all the cork-raising countries, which, by the way, is the invention of some enterprising American. Naturally, those cut by hand are the best, and bring highest prices. The tree grows from 20 to 60 feet high, and sometimes to three feet in diameter. It lives to a great age, often attaining 150 years. Such old trees should always be cut down to make room for the new ones.

Our Public Roads.

EDITOR AMERICAN FARMER: It is seldom in the last year that I have picked up a paper to read but what I see one or more articles on public roads. And it speaks for itself that our people are getting in earnest about getting out of the mud, and why we do not, because we often boast of our intelligence as a people of this American Government—people capable of excelling any other Nation in modern inventions. The question arises, as we go along, that we have been so thoughtless and careless about our greatest needs—public roads—while other Nations are sending missionaries to far excel us in public roads. But I am glad that day is breaking; that our missionaries are being called home; that is, we are educating new ones and keeping them at home. Road conventions have already been called in different States. We farmers often complain of high railroad rates, tariff, etc. At the same time, it has been clearly proven to us time and again that it costs more for the farmer to haul his products to the railroad station five miles than the railroad charges from the station to the market. This is an important year to keep the question of roads before our people, because our different Legislatures meet next Winter, and we should know by what means the best road system can be brought about. Under our present road law, the time farmers put in working the roads is nearly all lost. Our road overseers have so few days to work on the roads in the year, and so many miles of roads to look after, that they cannot do a first-class job on any one given piece, and by the next year comes around the road that has been worked is nearly as bad as ever. But how this is to be brought about without high taxes that we growl so much about is one of the difficult problems that makes us American farmers scratch our heads. And in this article I shall not attempt to offer any suggestions until we hear more from the larger guns. I will give your many readers a few statistics of our own. I live five miles from Emporia. Last March I bought a ton of bran in Emporia, and on account of the bad roads I had to make four trips with a two-horse team to haul that one light load, and my horses had to pull harder every trip than they would have had to on a good road with more than a ton on. So it cost me three extra trips to town, 30 miles, and I had to pick days to go when I was losing money by not working on my farm. Counting time, distance, travel and wear of team, I payed pretty dear for my bran.—J. R. COTTON, Emporia, Kan.

With the approaching warm weather, great care should be taken in sowing the seeds to roll and pack the surface after the sowing. This prevents the surface from becoming too dry.

The Colonel's Daughter.

Her Wild Ride with her Lover to Reach the Arizona Frontier.

By Buckey O'Neill.

THE MEXICAN army is a peculiar institution. There is probably no other military organization in the world similar to it. It is enlisted by compulsion, but it is not the compulsion that fills the ranks of other armies. In Mexico, the army is rather a school of correction. Besides being military, it is also reformatory. When a man develops into a missionary of a new political faith, sooner or later—and generally the former—he finds himself in its ranks; after that his mission loses even to him its importance. If his prominence makes his utterances particularly troublesome, there is another method of quieting him—one that puts him in a place where men do not talk. This method is sometimes facetiously described as filling one's mouth with dirt. To it the army is preferable. When the man with a mission is not sufficiently important to justify his being shot, after he has joined the army, he is drafted for service in Yucatan or some other locality where Indians and disease are particularly virulent. Strange as it may seem, once in the army the men serve well, and are said to be able to outmarch anything on earth, and when it comes to facing death they do it with as much nonchalance as a religious devotee. It is the discipline that does it. How perfect that is is occasionally shown along the Rio Grande when a regiment is marched down in platoons to bathe. While one-half the men bathe, the other half guards them to see that none desert to the American shore. Then the process is reversed. It is said that each half prides itself on the accurate marksmanship that they in this way get occasional opportunities to display.

Only a few years ago there was a mutiny in northern Sonora—the newspapers called it a revolution. After it was quelled a squad of the ringleaders were ordered out to be shot. Of course it was a gala affair, as such occasions always are in Mexico. The principal actors, however, so little appreciated the possibilities of the occasion as to present a very ragged alignment in front of the firing-party. Probably the priests who marched with each were the most to blame. Anyhow, scandalized by such unsoldiery disregard of tactics, the officer in command gave the order: "Right, dress!" "Front!" And when the line was as even as if on parade, he added the order to fire. Even with such professional care, it is said, the men persisted in their mutinous conduct to the last, by falling in a most unmilitary windrow. In justice to the mutineers, I should state that I heard this story afterward in Arizona, and even Arizona has some magnificent liars.

In order to make the idea of discipline more thoroughly impressive, when an officer is struck or a deserter captured, the offender is usually shot by a squad of six in the back while facing an adobe wall.

A few years ago there was not a more firm believer in discipline than Don Martin Cortina, Colonel of the Tercer Regimiento de Caballeria. The nearer a subaltern came to not thinking at all, the better soldier did he become in the opinion of Don Martin. So thoroughly orthodox was Don Martin's idea of discipline, that to his regiment were drafted the most incorrigible of the political offenders who believed they knew more about the affairs of government than did the government itself. A year or two with the colors under Don Martin's command always resulted in the thorough conversion of such persons—at least no one ever heard of them again as actively engaged in propagating their ideas of national reforms in public affairs.

When the regiment was assigned to the military zone, including northern Sonora, to take part in the suppression of one of the periodical outbreaks along the Yaqui River, there was in the ranks a young man to whom Don Martin was wont to point with pride as an evidence of what good thorough discipline can do. This young man was Miguel Melendrez, who, two years previous, had returned from receiving an education in the United States, enthusiastic with a new political faith that he felt should supersede all others, so far as Mexico was concerned. Less than six months had found him in the army convinced that his views were, if nothing else, premature, and that it was wisdom to devote himself strictly to his duties.

"A handful of type and a printing-press have ruined many a good man," the colonel had sententiously remarked in discussing the case; "but the army is a good teacher. It does not take a man in the ranks long to learn that he is not a Messiah. *Caramba!* An editor is worse than a dozen *pronunciamientos* when he thinks he knows something. As he writes so well, we will make him *Sargento-Mayor*, now that he is tamed. It will give him something to do, and show him that he may do something, even if he cannot overturn the world in a day."

So Senor Miguel Melendrez, once editor of *El Independiente*, became *Sargento-Mayor*, and he had almost reconciled himself, with some degree of contentment, to remaining in the army until his term of enlistment expired, when fate ordained that Angelita, the only daughter of the Colonel, should join her father at Magdalena, where the headquarters of the regiment, when not in the field, were stationed.

Keen as the Colonel's eyes were when discipline was concerned, they were not keen enough to foresee that the Sergeant-Major and his daughter were to fall in love. If it were not a case of love at first sight it was very near it. A word now and then, whenever their few and chance meetings permitted, and the old story was known and realized by both, as once in the life of every man and woman it is sometimes known and realized. It only needed a wound that Miguel received, and the praises of his bravery throughout the regiment, to cement it. The few weeks in hospital and his slowly-returning health had prevented him from rejoining the regiment in active campaigning, and in that time he had found opportunity to tell Angelita everything of his early life, the death of his father, his education in the United States, his career as an editor after his return to Mexico, and the alternative that had been given him of joining the army or remaining in prison for publishing sentiments not approved by the Government. To all Angelita had given a sympathetic hearing, and the pity she bestowed did not at all diminish the love she felt for him. To think of the future, though, made them tremble. Neither for a moment believed that her father would consent to such an alliance, and both knew that even a suspicion of their true feelings would result in Miguel's being returned to prison or transferred to some distant regiment, which, in either case, meant eternal separation.

"We can only wait, *alma mia*," said Miguel, in deploring the barriers that separated them. It was at night, and he stood in the shadow by her window while speaking. He had never spoken to her elsewhere.

"Yes, for to-morrow the regiment returns, and you must come here no more. There will be those who may watch, and it would be terrible if my father should discover our meetings," sighed Angelita.

"I will be so careful that no one will know it," Miguel responded.

"No, no; you must not come. I will not come to meet you," Angelita had answered to all his pleadings.

"Promise me, at least, *carissima*, that you will wait for me, no matter what may come," he had asked, and Angelita had called on the Holy Virgin to witness that she would marry no one until Miguel could claim her.

With the return of the regiment, despite their resolution to the contrary, the lovers still occasionally met at the window to whisper a few words to each other. With the festivities attending the close of the campaign, Angelita was always surrounded by suitors attracted by her beauty and accomplishments. One of these—a Captain in the regiment—her father favored particularly, and constantly urged the acceptance of his suit. Rich and still middleaged, Capt. Almonte was a catch that any girl might find acceptable. To her father's urging, Angelita said nothing, until one day he had pressed more strongly than usual, when she had simply said:

"Father, I cannot marry him; I do not love him."

It was the first time in his life that the Colonel's opinions of discipline had been so rudely shocked, and he was almost speechless with amazement. "What do you know of love, you chit of a girl? Is he not of good family and rich, and does he not love you? He will make you a good husband, and marry him you shall!" swore the Colonel, in the most resonant of Castilian oaths.

Angelita, whatever were her thoughts, said nothing; and, while she continued to receive the attentions of the suitor her father had selected, she steadfastly declined to consent to any proposal of marriage.

"Who is it that you want? If your sainted mother was only here, what would she say to such conduct?" and the Colonel would grow purple with rage at the idea of such open mutiny in a quarter usually so obedient.

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In a regiment, much as in a family, the business of one is the concern of all, and it was not long before the love affair of Angelita was canvassed in mess-room and barracks.

"*Dios!* but the little one is brave," said one of the oldest among the troopers, one evening, in discussing it. "I would not do it for the best horse in the regiment."

"It is strange, too, for Almonte is not a bad fellow, if he does gamble and drink a little, besides he has money enough to pay for it all. She must be in love with some other. Who can it be?" queried a second.

"Perhaps it is that young Aviso, who has just been turned out with all the knowledge of a professor of Chapultepec in his head. He undertook to teach me how to care for my horse only yesterday," growled a third.

"Bah, that boy? No. It is no one in the command, for if Almonte hasn't money enough to marry her, none of the rest have. It may be some *gringo* in the United States of the North, whom she met while at school," added another; "but I will wager that she will take Almonte. All women are like broncos, hard to

handle at first; but, in time, they all go as you want them, and Dona Angelita will be like the rest."

"You are right, Pablo," said a new-comer, "for I have just heard at the cantina that Capt. Almonte has ordered a new uniform to be married in, and they have just led old Juan out of the guard-house to make it. If he gets drunk now instead of attending to his needle, he will catch it."

Miguel, who had entered the room on some duty, arrived just in time to hear the last speaker. For an instant he felt as if he had received a heavy blow; but gathering himself together, he delivered his orders and left. The words that he heard rang in his ears, but somehow he could not realize their full significance. It was like the numb sensation that is the first phenomenon appearing after one has received a severe wound. He would not believe it. He would see her, and satisfy himself whether or not it was so. At length, night that he so impatiently longed for came, and, separating himself from his comrades, Miguel took his position in the dark shadow of the trees that lined the walk before the Commandante's quarters, before the window where he was wont to meet Angelita. In deference to her fears and wishes, it has been more than a week since he had met her. How slowly the hours passed away. The bugle-call had sounded taps, and the camp lay clothed in stillness, save when the sentinels called the passing hours, announcing that all was well. In the stillness of the night he could hear the call coming softly back like an echo from the most distant posts. Here and there in the officers' quarters, a light could be seen; but, at last, one by one these, too, were extinguished. He began to despair of seeing her. Could it be true that, at last, she had proved false and discarded him? From within the house, through the open windows, he could catch occasionally the sound of mirth and singing, and sometimes he thought he could even hear her voice, as if she were entertaining company. Now and then he thought he could distinguish the voice of the Colonel, rising in that inflexion peculiar to one accustomed to command, and sometimes, in the indistinct tones of the conversation, in his jealousy, he believed he detected the voice of Almonte. As he waited, desperate thoughts flitted through his brain. If what he had heard was true, he would shoot Almonte dead on parade, openly and before the whole command, and accept, with indifference, the consequences. Death would be preferable to seeing the woman he loved become the wife of another—to see her bear him children as the long years he had yet to serve passed away. No pains that priests had ever preached of could be worse. While he was thus busy with his dark thoughts, a sudden rustling of skirts fell on his ears, and the next instant the heavy iron bars that guarded the window showed dark and black against a white dress, while the faint fragrance of a perfume that he loved as part of her was in the air.

"Angelita!"

"Miguel!"

"Rising, he walked to the window and seized and covered with kisses the little hand, so white and soft, that was stretched forth to greet him.

"Tell me, Angelita *mia*, that it is not true that you have consented to marry Almonte."

The hand that he held trembled, and in vain he waited to hear the denial that he hoped for.

"It is not so, *carissima*. Tell me it is not so," he implored.

"*Querido mio*, how can I tell you? You know my father. What could I do," came the answer, in tears.

"Enough! I will kill him! I will shoot him before the regiment."

"No, no—for the love of God, no! They will kill you," she implored, in a voice filled with agony. *Querido mio*, no! He is here now. I have just left them. For the love of God—for the love you bear me—do not do so. Go, I will see you again. My father may hear you," and the trembling hand that he held was withdrawn from his grasp, and the white form disappeared from the window. As it did so, the harsh voice of Almonte, who had just turned the corner, after bidding the Colonel good-night, asked:

"Who are you? What are you doing here?"

For an instant both men looked in anger into each other's eyes, and then each knew the other's secret. For an instant only, though, and then the fingers of each grasped the other's throat in deadly hatred. Not a sound did either utter, but from the window of Angelita came a scream that rang out on the stillness of the night like a trumpet. In a moment the sentries from the nearest posts separated the struggling men, and the voice of the Colonel was heard inquiring from Almonte:

"What is it, Senor Capitan?"

"Only a thief I detected trying to break into your daughter's room. It is the Sergeant-Major."

"Ah, my fine fellow, so in addition to being a revolutionist you have turned thief, have you?" sneered the Colonel, as he looked into Miguel's face. "That is the way with most of you reformers; when you cannot plunder by revolution you do it on a smaller scale. What excuse have you?"

Pale with anger, Miguel remained silent. From within he could hear the sobs of a woman crying. He would not disgrace her by telling why he was there. It mattered but very little after all what anyone thought now, for at best it would be but a day or two until a file of soldiers would end it all.

"Take him to the guard-house, and to-morrow he will be given a trial. I believe he struck you, Senor Capitan?" spoke the Colonel, turning to Almonte.

"It is nothing. I am glad for the honor of the regiment that I caught him; but I am afraid that he has badly frightened Dona Angelita," answered Almonte, as both caught the sound of sobbing through the window, and bidding the Colonel again good-night, he walked toward his quarters.

Returning within the house, the Colonel had hardly entered the door when the white figure of Angelita threw itself on its knees before him.

"*Padre mio*, for the love of the Holy Virgin listen to me. It is my fault. He came to see me. I love him," wailed the girl.

"Who—Almonte?" queried the astonished father.

"No, no—Miguel," was the sobbing reply.

"What! You love that beggar? That *peon!* It is impossible."

"No, father, I love him. Do what you will with me, but spare him."

"Spare him! By the Mother of God, no! Why did I not kill him with my own hands? If he had ten thousand lives I would take them all. He has disgraced me, and he shall die."

"Father, father, do not kill him. Send him anywhere, but spare his life. I will marry Almonte gladly. I will do anything. But save Miguel. I love him."

"You talk like a fool. You will marry Almonte anyway, if he will take you after the way this dog has disgraced you. Go to bed. Enough of this. I would rather that you were dead than you should have done this. Marta, take her to her room, and to-morrow I will settle with you for allowing her to meet this beggar."

* * * * * * * *

A drum-head court-martial is never a long affair. It is the most expeditious of all tribunals—a tribunal from which there is no appeal and in which there is scant mercy. It was not yet midday ere Miguel had heard his sentence to be shot in the back for striking an officer, which charge the Colonel had insisted should be preferred against him. Throughout the night after his arrest, as he had lain awake, he had foreseen what it would be, yet, when the sentence had been pronounced, it was a relief. Until then he had had some hope, though he hardly admitted it to himself. But now it was only a question of a few hours. Now the tick, tick, tick, tick of the clock in the guard-room meant that the bright dawn of the morrow was coming nearer and nearer, when the regiment would be formed in hollow square to see him meet his fate. How his thoughts wandered. Who would be in command of the firing-party, and from what company would it come? Would he be killed by the first volley, or would he fall, only wounded, to await death until its Sergeant would put a pistol close to his head and finish the work? He hoped, with the feeling that even the most indifferent have, that they would not shoot him in the face. Through all his conjectures and hopes and fears were mingled thoughts of Angelita. Throughout the trial he had resolutely refused to make any defense. For an instant, when he had seen the dark, scowling face of Almonte, he had felt tempted to tell all. Not to save himself, but that Almonte might know that it was to meet the woman who was his promised wife that he had gone to the window. How it would rankle in Almonte's breast in the years to come, when his children would cluster around his knee, as he thought of the soldier who was shot for the love of their mother, and wondered in his hot Southern jealousy how far the woman who was his wife and the dead man had let their love lead them.

But he set the temptation aside and met his doom in silence. It was hard to die with his comrades believing him a thief. After all, what difference did it make? A few years, and it would all be forgotten. Now that it was settled he longed to have it over, and waited impatiently for the morning. Through the long Summer afternoon he watched the shadows lengthen in his cell and listened mechanically to the bugle-calls that sounded off the passing of the day. As the sun went down he had heard the band playing the old familiar strains for the regiment's evening parade, and wondered who was acting as Sergeant-Major in his stead. After the parade had been dismissed, many of the men passed the guard-house, and, through the narrow window of his cell, he had caught them looking in curiosity to where he was confined. A few had come to bid him good-by. At last night had come, and he had sat in darkness in his cell until the moon had risen to flood it with its mellow light, making strange shadows on its floor and walls. In his thoughts there was always the memory of the pale, white face that he had last seen at the window. It would have been better if he had never lived than to die leaving her behind to pass into the arms of another. Would she send him a last message before all was over? Only a word, and he would die satisfied.

In vain had Angelita implored her father to deal leniently with her lover. Through the night she had prayed that something might intervene to save him; but, when her father had returned after the court-martial, from his stern, set face she knew that there was no hope. Again and again she had thrown herself at his feet, imploring him to show mercy, until at last he had left the house in anger. Then she had given way to despair, though still hoping and praying that he might return. When night had come on without his returning, she had started to leave the house in search of him, but was stopped by Marta, the old *duena*, who refused to let her go. Half crazed with fear and grief, she passed from room to room, in the vain hope that he might have returned unknown to her.

As she entered the room where he was accustomed to attend to his official correspondence, she saw the report of the court-martial which had condemned her lover. It was already prepared for transmittal to the General in command. She picked it up, mechanically glancing over it. It needed only the report of the execution to make it complete. How cold-blooded and brutal it seemed. As she threw it from her, she almost felt her heart cease beating with the inspiration of a new hope, and then dropping into a chair began to write, imitating, with feverish speed, the well-known chirography of her father. When she had finished she sealed it, and, stepping into the *patio*, called to her the Orderly there in waiting. For years he had been almost a member of the household. She spoke to him as to a servant:

"Pablo, my father wishes you to take this to Capt. Andreas, the Officer of the Guard. There is no answer, and you need not return."

The old man took the missive, and, saluting, turned and left the house. He had received so many orders in the same way that he took it as a matter of course, pleased at being relieved for the night to join with his comrades in discussing the coming execution. As he delivered his message to Capt. Andreas, that officer twisted his mustache in amazement, and muttered:

"That is strange. I wonder what he wants with him. Probably to see why he did not answer at the trial to-day. He may have made up his mind to give the boy another chance. Anyhow, it is not my affair," and stepping into the corridor of the guard-house, he ordered a Sergeant to take two men and escort the prisoner Melendrez to the Colonel's quarters.

Miguel heard the order with amazement. Had the Colonel at last relented? It was Angelita who had done it. Life that seemed so distant grew nearer and dearer with a new hope. As he accompanied the guard toward the Colonel's quarters, life had never before seemed so well worth living. The dark-blue sky, studded with the more brilliant of the stars, had never looked so beautiful. The very air itself seemed changed. The sleeping camp, so quiet and still in the bright moonlight, seemed itself to speak of peace and love among men.

As they reached the Colonel's door, Angelita opened it and said, simply:

"My father is in his office, and will see the prisoner alone. You will guard the door."

For an instant the Sergeant seemed to hesitate, as if debating whether or not to obey, and then motioning acquiescence with his head, Miguel stepped forward and entered. As he did so, Angelita slowly closed the door and noiselessly drew across it the heavy chain that secures the outer door of all houses in Mexico.

"HAVE COURAGE, QUERIDA MIA; WE ARE CLOSE TO THE LINE."

She had hardly done so when Miguel clasped her in his arms and kissed her face, which was wet with tears. It was the first time their lips had ever met, and it thrilled them through. For a moment they stood thus, and then leading him through the darkened rooms into the *patio*, she placed a purse in his hand, saying:

"Here is all the money I have. Take it, and in the corral you will find my father's horses. No one is there. Take the best and go at once. It was I who wrote the order that brought you here. Go to the United States—you have been there before—and forget me," she added, with a sob.

"And you will go with me?"

"No; it is impossible. I must remain here; what would my father say? You must go and forget me. Hurry; they may discover your escape at any time, for my father is in the garrison. Listen. There is someone coming. Go, go," and in her terror she began to push him toward the corral.

"No, by God, no! I will not go alone. If you will not go with me, I will stay and wait for to-morrow. I do not care for life without you."

Unconsciously his voice had grown louder, and she put her hand over his mouth to silence him; and, as she did so, he caught her around the waist and gently led her toward the corral. For an instant she resisted, and then allowed herself to be led. As he passed through the *patio* he caught old Marta, who met them, by the arm and led her along. The old woman began to cry, and, clinging to her mistress, beseeched her by everything dear to remain.

In an instant they were in the corral among the horses, and, leaving Angelita standing with the old woman, Miguel led the best two forth, and taking from the wall the saddles and bridles, he soon had them ready for riding. With feverish haste he went over each cinch and buckle to see that it was securely fastened, and then he turned to where Angelita stood, and, releasing her gently from the grasp of the old woman, led her toward the horses. The old *duena* threw herself on the ground and began to scream. Moved by the old nurse's cries, Angelita for a moment hesitated. Alarmed by the screams of old Marta, one of the soldiers discharged his gun, and then, receiving no reply to their demands for admission, the guard began to batter the door in. In the garrison the rolling of the drums, mingled with the sound of the bugle, could be heard calling the men to arms in response to the guard's alarm.

"Go, for God's sake, go, *querido mio!*" she exclaimed, "or else they will kill you."

Miguel caught her in his arms, and, drawing her close to him, said:

"Angelita *mia*, you go with me, or I go not at all. Life would be a burden without you. Will you go?"

For an instant the dark eyes, wild with the agony of fear and contending emotions, looked into his, and then Miguel knew that she had consented. An instant more and he had swung her into the saddle, and they rode out of the corral together. As they passed from the corral they could see the dark forms of men falling into line, their arms glittering in the moonlight, while the drums were still breaking the stillness of the night with their wild beating. Only for an instant, though, and then they had left the confines of the camp and were spurring northward.

The bright moonlight made the fair Southern night almost as bright as day. From the west came gentle breezes heavy with the odor of flowers. Far ahead stretched the road toward the distant mountains of Arizona, with many a weary league between. Could they reach there before they were overtaken? There were but few horses in the regiment equal to those they rode, but the best would be used to follow them. Miguel looked at Angelita as she rode by his side; her beautiful face seemed so white against the dark background of her hair. She returned his gaze with a smile, as if contant now to leave all to him. So they rode neck and neck. Whenever the gait of the horses slackened he would reach out and draw her toward him to kiss her again and again. But this was not often, for death rode behind for at least one, and they pushed their horses to the utmost. Hour after hour passed. The moonlight began to wane before the gray of the day. The gray in time gave way to the purple light of morning that flooded the valley and crowned the distant mountains with its halo. For the first time they could see far away in the distance a cloud of dust. How anxiously each watched it. Occasionally, when the morning's wind in its fresh coolness swept past them, it would cast aside the vail of dust and then they could see the men who had made it, riding as they were riding. Neither spoke, for both knew what it meant. A broken strap or buckle, and for them the race would be lost. As Angelita watched, her face grew pale and her dark eyes gazed searchingly into those of Miguel's. She could not utter the question that seemed to choke her.

"No, *alma mia*, they cannot overtake us," but he did not know whether it was so or not. It was still many a mile to the frontier. Even if the horses stood the strain, Angelita might fail.

The sun rose bright and clear, driving before it the chill of the night. In the increasing heat they should ride more slowly, but the men behind never seemed to slacken their headlong gait, and for them to do so would have been suicidal. They both patted their horses' necks, and spoke to them as to comrades, calling them dear names and praising their speed. The road was deserted. Here and there they had passed wagons abandoned by their owners on account of the Indian outbreak. The distant mountains to the northward grew more and more distinct, and turning with a smile of encouragement, Miguel said:

"Have courage, *querida mia;* we are close to the line."

"Do not heed me, but ride on. They will not harm me [illegible] you"—— and she shuddered as she thought what capture meant for her love.

Miguel looked at her. The strain of the ride was beginning to tell in her pale face and dark eyes. Would she be able to bear it much longer? As if divining his thoughts, Angelita said:

"If anything happens to me, ride on."

"No; I will stay with you," he answered,

The dust-cloud was steadily gaining on them. Instead of one, there were now two, the best mounted of their pursuers in advance. To the north, they could see a flag other than their own against the background, formed by the dark mountains beyond. How the horses strained. It was useless to urge them. Gradually, one by one, the more prominent buildings in the town became distinct, while behind them they could hear the loud halloo of the soldiers in pursuit challenging them to surrender. In advance of all they could see Almonte. They were already within rifle-shot, and were it not for fear of wounding Angelita, Miguel knew that long ago he would have rolled from his horse into the dust of the road a dead or dying man. The thought that in the fear of losing him some of the soldiers might fire, made him swerve from Angelita's side so as to put the road between them. He had hardly done so when shots were fired, and the bullets whistled past him or spit viciously as they ricocheted from the hard-beaten road. Angelita, realizing what he had done, again rode to his side. They could see Nogales, the town on the American side, plainly. Attracted by the firing little crowds had gathered in the one street to watch the strange riders. As if realizing that the race was won, the horses seemed to catch the spirit of their riders, and with heaving flanks sprang forward, neck and neck, and then there came a single shot from behind, and Miguel

felt his bridle-arm fall limp by his side. As he glanced back he could see the still smoking gun in Almonte's hand. He smiled, though, for almost at the same instant they had crossed the line amid the cheering men who had witnessed the cowardly shot, and he and the woman who had rode so bravely by his side through the long night, knew that they were safe at last.

If you should go to Tucson and inquire for Don Miguel Melendrez, there will be pointed out to you a very elegant mansion, and if you enter it you will probably meet an old man whose bearing still bespeaks the soldier. It will take but very little encouragement to have him tell you the tale that is written here, and as he closes it he will surely say:

"*Caramba*, he make a good, what you call 'm, lawyer; but a soldier, no, for he have no idea of deesceepleen." And then the Colonel will take his namesake on his knee and dance him up and down in a most unmilitary manner for a man who was once Commandante of the Tercer Regimiento de Caballerio de Mejico.—*The Argonaut.*

Elegy Written in a Country Churchyard.

The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea,
The plowman homeward plods his weary way,
And leaves the world to darkness and to me.

Now fades the glimmering landscape on the sight,
And all the air a solemn stillness holds,
Save where the beetle wheels his droning flight,
And drowsy tinklings lull the distant folds.

Save that, from yonder ivy-mantled tower,
The moping owl does to the Moon complain
Of such as, wandering near her secret bower,
Molest her ancient solitary reign.

Beneath those rugged elms, that yew-tree's shade,
Where heaves the turf in many a moldering heap,
Each in his narrow cell forever laid,
The rude forefathers of the hamlet sleep.

The breezy call of incense-breathing morn,
The swallow twittering from the straw-built shed,
The cock's shrill clarion, or the echoing horn,
No more shall rouse them from their lowly bed.

For them no more the blazing hearth shall burn,
Or busy housewife ply her evening care;
No children run to lisp their sire's return,
Or climb his knees, the envied kiss to share.

Oft did the harvest to their sickle yield,
Their furrow oft the stubborn glebe has broke;
How jocund did they drive their team afield!
How bow'd the woods beneath their sturdy stroke!

Let not Ambition mock their useful toil,
Their homely joys and destiny obscure;
Nor Grandeur hear with a disdainful smile
The short and simple annals of the poor.

The boast of heraldry, the pomp of power,
And all that beauty, all that wealth e'er gave,
Await alike th' inevitable hour:—
The paths of glory lead but to the grave.

Nor you, ye proud, impute to these the fault,
If memory o'er their tomb no trophies raise,
Where through the long-drawn aisle and fretted vault
The pealing anthem swells the note of praise.

Can storied urn or animated bust
Back to its mansion call the fleeting breath?
Can Honor's voice provoke the silent dust,
Or Flattery soothe the dull, cold ear of Death?

Perhaps in this neglected spot is laid
Some heart once pregnant with celestial fire;
Hands that the rod of empire might have sway'd,
Or waked to ecstasy the living lyre.

But knowledge to their eyes her ample page,
Rich with the spoils of time, did ne'er unroll;
Chill Penury repress'd their noble rage,
And froze the genial current of the soul.

Full many a gem of purest ray serene
The dark, unfathom'd caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air.

Some village Hampden, that with dauntless breast
The little tyrant of his fields withstood,
Some mute, inglorious Milton here may rest;
Some Cromwell, guiltless of his country's blood.

Th' applause of listening senates to command,
The threats of pain and ruin to despise,
To scatter plenty o'er a smiling land,
And read their history in a Nation's eyes.

Their lot forbade; nor circumscribed alone
Their growing virtues, but their crimes confined;
Forbade to wade through slaughter to a throne,
And shut the gates of mercy on mankind.

The struggling pangs of conscious truth to hide,
To quench the blushes of ingenuous shame,
Or heap the shrine of luxury and pride
With incense kindled at the Muse's flame.

Far from the madding crowd's ignoble strife,
Their sober wishes never learn'd to stray;
Along the cool, sequester'd vale of life
They kept the noiseless tenour of their way.

Yet e'en these bones from insult to protect,
Some frail memorial still erected nigh,
With uncouth rhymes and shapeless sculpture deck'd,
Implores the passing tribute of a sigh.

Their names, their years, spelt by th' unletter'd Muse,
The place of fame and elegy supply;
And many a holy text around she strews,
That teach the rustic moralist to die.

For who, to dumb forgetfulness a prey,
This pleasing, anxious being e'er resign'd,
Left the warm precincts of the cheerful day,
Nor cast one longing, lingering look behind?

On some fond breast the parting soul relies,
Some pious drops the closing eye requires;
E'en from the tomb the voice of Nature cries,
E'en in our ashes live their wonted fires.

For thee, who, mindful of th' unhonour'd dead,
Dost in these lines their artless tale relate,
If, 'chance, by lonely contemplation led,
Some kindred spirit shall inquire thy fate,—

Haply some hoary-headed swain may say,
"Oft have we seen him, at the peep of dawn,
Brushing with hasty steps the dews away,
To meet the Sun upon the upland lawn.

"There, at the foot of yonder nodding beech
That wreathes its old fantastic roots so high,
His listless length at noontide would he stretch,
And pore upon the brook that babbles by.

"Hard by yon wood, now smiling as in scorn,
Muttering his wayward fancies, he would rove.
Now drooping, woeful-wan, like one forlorn,
Or crazed with care, or cross'd in hopeless love.

"One morn I miss'd him on the custom'd hill,
Along the heath, and near his favorite tree;
Another came; nor yet beside the rill,
Nor up the lawn, nor at the wood was he.

"The next, with dirges due, in sad array,
Slow through the churchway-path we saw him borne.
Approach, and read (for thou canst read) the lay
Graved on the stone beneath yon aged thorn."

There scatter'd oft, the earliest of the year,
By hands unseen, are showers of violets found;
The redbreast loves to build and warble there,
And little footsteps lightly print the ground.

THE EPITAPH.

Here rests his head, upon the lap of Earth,
A youth to fortune and to fame unknown;
Fair Science frown'd not on his humble birth,
And Melancholy mark'd him for her own.

Large was his bounty, and his soul sincere;
Heaven did a recompense as largely send;
He gave to misery, all he had, a tear,—
He gain'd from Heaven ('twas all he wish'd) a friend.

No further seek his merits to disclose,
Or draw his frailties from their dread abode,
(There they alike in trembling hope repose),
The bosom of his Father and his God.

—*Thomas Gray.*

Treating Sandy Soils.

In considering the subject of manure or fertilizers it should not be forgotten that the mechanical condition of the soil, or its texture, is very important. Soils differ greatly in composition, and as they differ in this way so much they vary in their behavior under changes of the weather. There are soils that without a large mixture of decaying organic matter in them will run together after rain and become so compact as entirely to prevent circulation of air through them. Some sandy land is much given to this behavior, and with such it is found indispensable that it be well supplied with decaying vegetable matter, manure especially. Heavy clay land equally needs the same mixture. Thus the use of fertilizers alone for any length of time on such lands has been found undesirable.

To turn under clover grown by the use of fertilizers is one way to overcome this difficulty, but it is not always practicable to do this. Hence it is necessary in such cases to employ manure at whatever cost, and thus fill the land with an adequate amount of organic matter.

It is for this purpose that a peat swamp becomes so valuable, for the black, decayed matter of the swamp is precisely what is wanted to mix with the soil and darken its color—which has an important effect on it in absorbing heat—while it is stocked with valuable organic substance which contains a large quantity of nitrogen that becomes slowly available, and it is thus a lasting improvement to the land. It has been found that under such circumstances the fertilizers have had the most satisfactory results, showing their useful effects for several years.

The natural debris of crops in the form of roots and waste stems and leaves is not sufficient alone for this purpose, the amount being wholly inadequate. Even a clover sod is not sufficient unless the whole second growth is turned under, or this crop is repeated frequently so as to fill the soil full of carbonaceous matter. When this has been done, or 30 or 40 tons of swamp muck to the acre have been applied to a light, sandy soil, the color has been changed in three years to a dark brown from a light yellow, and a blowing sand has been made a firm and fertile loam.—*New York Times.*

Wire Glass.

Under the name of wire glass, a new invention has been brought on the market by a Dresden firm which marks an important development in the glass-making industry. A foreign exchange tells that the process of manufacture consists in furnishing glass in a hot, plastic condition with a flexible metallic layer, iron-wire netting, for instance, which is completely inclosed by the vitreous substance and effectively protected against exterior influences, as rust, etc. The new glass, which has been patented in the leading countries, possesses much greater resisting power than the ordinary metal, and is, it is claimed, indifferent to the most abrupt changes of temperature, and will even withstand open fire.

A further proof of its toughness and durability is stated to be the fact that it may, in a highly-heated state, be sprinkled with cold water without being materially damaged. The glass is specially adapted for skylights, the powerful resisting qualities of the material enabling the usual wire protectors to be dispensed with. As wire glass cannot be cut by the diamond, except under the application of great force, and cannot be broken without creating considerable noise, the substance is claimed to be, in a measure, burglar proof.

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Because it should be the policy of every country to produce as much as possible at home; to give as great profits as possible to its own people; to furnish them the utmost amount of employment, and to keep their money in circulation at home, instead of scattering it abroad.

This is the whole matter in a nutshell.

Buying and selling goods abroad is always a wasteful operation. Disguised as it may be, yet every dollar paid for transportation great distances, and all the profits levied as tolls by the go-betweens in the operation, is taken out of the pockets of the producers and consumers. The nearer together that producers of different kinds of articles are the more each one has of the other's products. The farther apart they are the less each one has. The merchant, the commission man, the railroader, and the sailor do not add value to the goods they handle. Their gains are taxes on the producers. The more of them that are thrust in between the two kinds of producers, the less both kinds of producers get for their labor and pains.

For example: When we raise oranges in Florida, and wheat in Dakota, the orange-growers get more wheat or flour for a box of oranges, and the wheat-growers get more oranges for a bushel of wheat than if the orange-growers lived in Italy. The profits of running the ships between American and Italy, and of the commission men that handle the trade between the two countries, are divided up between them, and go into their pockets, instead of being lost on non-producers. This is the common sense of political economy, and against it the theories of Free-traders dash in vain.

If we could have an ideal system of production in this country, not a bushel of grain nor a pound of meat would be bought or sold abroad. We would raise only as much grain and meat as our own people needed, and the men now engaged in raising surplus grain and meat would be engaged in producing the needed sugar, wool, oils, flax, silk, hemp, jute, cork, fruits, nuts, cattle, sheep, horses, poultry, eggs, hops, tobacco, vegetables, butter, cheese, and other farm products for which we pay out every year tens of millions of dollars to the farmers of other countries.

Another thing: The prosperity of the country is largely dependent upon the amount of money kept in circulation among the people. When we pay out $100 to our own people for farming products the money is immediately transferred from one class of producers to another, and in a little while it does the work of tenfold that amount. But if we send that amount abroad for those products its usefulness is destroyed so far as we are concerned. Only a small portion of it ever comes back to us; the rest is dissipated to the ends of the earth. It is the difference between pouring water into a cistern or running it over a sand-plain.

For these reasons we strongly favor raising everyting in this country that can be successfully raised here, and we believe that it is the duty of the Government to promote and encourage such a condition of things. Look at the following table of farm products which we imported last year:

FREE OF DUTY.

Articles.	Amount.	Value.
Cattle, number	2,740	$49,326
Horses, number	6,483	2,009,955
Sheep, number	9,606	127,221
All other, including fowls	.....	279,408
Total	.....	$2,495,910
Indigo, pounds	2,089,007	$1,600,830
Licorice root, pounds	55,307,911	1,429,509
Chicory root, raw	1,864,821	35,512
Cork bark	.....	1,240,008
Cotton, raw, pounds	20,908,817	2,825,004
Eggs, dozen	7,007,826	1,053,954
Farinaceous substances, lbs	.....	543,760
Fruits	.....	10,423,814
Oils, vegetable	.....	2,469,432
Seeds	.....	880,304
Silk, raw, pounds	6,300,530	19,077,306
Sugar and molasses	83,453,339	13,828,993
Textile grasses, tons	197,562	17,906,809
Total	.....	72,713,785

DUTIABLE.

	Quantity.	Values.
Cattle, numbers	9,753	$62,161
Horses, numbers	15,990	1,246,790
Sheep, numbers	336,163	1,091,985
All others, including poultry	.....	78,519
Total value	.....	$2,479,455
Barley, bushels	5,078,733	$3,222,593
Corn, bushels	2,111	1,651
Oats, bushels	9,677	5,048
Oatmeal, pounds	578,824	21,097
Rye, bushels	140,737	98,227
Wheat, bushels	45,968	431,940
Flour, barrels	8,413	43,180
All other breadstuffs, etc.	.....	650,800
Total value	.....	$4,484,536
Sumac, pounds	11,944,272	$245,536
Eggs, dozen	1,225,250	131,631
Flax, hemp, jute, etc. (raw), tons	74,028	185,896
Fruits, nuts, etc	.....	15,560,322
Hops, pounds	4,019,603	1,797,406
Malt, bushels	123,083	78,433
Olive oil, gallons	605,509	733,489
Other fixed vegetable oils, gallons	451,075	383,736
Essential oils	1,111,848	235,324
Butter, pounds	380,726	58,541
Cheese, pounds	8,883,640	1,356,752
Milk, condensed	.....	103,891
Meat extracts, etc	.....	587,650
Rice, pounds	206,522,683	4,143,910
Flax seed, bushels	1,515,546	1,667,552
Other seeds	.....	717,660
Sugar	.....	52,792,513
Tobacco and manufactures	.....	3,478,979
Beans and peas, bushels	1,656,774	2,078,571
Potatoes, bushels	5,402,272	1,797,927
Pickles and sauces	.....	511,163
All others	.....	1,688,713
Total of value of dutiable farm products imported	...	$98,301,585
Total value of non-dutiable farm products imported	....	72,713,785
Grand Total	.....	$171,015,370

Here we have, with other items that should be included, about $200,000,000 worth of farm products, the greater part—if not all of which—should be produced upon our own soil, and the money we now send abroad go into the pockets of our own farmers. Could this be done it would increase the prosperity of the country beyond all calculation. The $200,000,000 kept at home would be the best means of expanding the circulation, for it would fill the country with ready money by stopping the drain from the country of more than $4,000,000 a week, in gold.

It is nonsense to talk of sending this money abroad to people there to buy of us. If it is kept at home there would be that much more capital upon which our people could trade with each other. Our own people are our best customers. The trade of one good County of prosperous farmers is worth more to us than the whole of many foreign countries.

THE AMERICAN FARMER is going to fight for protection to American farmers until their acres are encouraged to produce every product they are capable of, and our purchases of foreign products are restricted to those things which our climate will not admit of growing.

IT is an ill-wind that blows nobody good, and the low price of cotton has set progressive Southern planters to actively considering schemes for improving the yield per acre, the lessening of the cost of production, and the bettering of the quality of the fiber.

Get up a Club for THE AMERICAN FARMER.

A CHANCE FOR SOMEBODY.

Why don't some enterprising man make his eternal fortune by putting pure cottonseed oil on the market in competition with imported sweet oil? The thing is so easy that it would almost go of itself, if once fairly started. The people are ready for it. They know that a large part of the imported sweet oil is either lard oil or cottonseed oil, and they would prefer the native product if presented to them in as attractive shape as the imported stuff now is. Let the man who goes into the business use nice, clear glass bottles, label them tastefully as "Pure cottonseed oil, prepared for table use," put on his name and place of business as a guarantee of the goodness of the article, have the newspapers stir up the matter of the preferability for all purposes for which sweet oil is used of the purified product of the cottonseed, and the thing will be done. A large and growing business would at once develop.

We have often thought that a large business might be developt in manufacturing peanut oil if placed on the market in the right way. Peanuts contain from 42 to 50 per cent. of an excellent oil, quite equal to olive oil for all the purposes for which this is used. Large quantities of peanut oil are made, but it is chiefly used for soap making. By a little care an excellent table oil can be made, which would supersede the use of foreign sweet oil.

We import every year about 2,000,000 gallons of "vegetable-fixed oils," valued at $1,000,000. Every gallon of this should be produced on our own soil, and every dollar paid for it go into the pockets of our own farmers.

THE Anti-Option Bill is now on the union calendar of the House, and has special privileges owing to its character as a revenue measure. Any day after the expiration of the morning hour a motion will be in order for the House to go into Committee of the Whole for the purpose of considering revenue and appropriation bills. The measure under this head which has precedence of all others is Representative Bryan's Free Binding Twine Bill. As soon as this is disposed of—which it is hoped will be next week—the Anti-Option Bill will stand next in order, and will be earnestly pressed by Representative Hatch. If for any reason the Free Binding Twine Bill should not be taken up, an effort will be made to substitute the Anti-Option Bill, and secure its passage.

EVERY civilized country has a pure food law much more stringent than the one now before Congress. It is demanded alike by public morals, public health, and public pecuniary interest.

TONE OF THE WOOL MARKET.

Justice, Bateman & Co.'s circular of May 2, 1892, shows "wool is firmer. Prices are no longer in buyer's favor. The downward tendency of the markets of the world for the past year caused a decline to a modified extent in American wool prices. On a downward market manufacturers usually buy from hand to mouth, carrying very light supplies. It is generally believed the woolen mills throughout the world have pursued this policy, and, as a rule, are now lightly supplied. Any change from a downward to an upward tendency heretofore has usually led to an active demand from many buyers who dared not be caught without supplies on a rising market, and this circumstance in the present instance has checked for the present at least the downward course of prices."

FARMER LEGISLATION.

The farmers of the country demand that before Congress adjourns it pass the following bills, which it has under consideration:

The Pure Food Bill.
The Anti-Option Bill.
The Rural Free Delivery of Mail Bill.
The Bill to Encourage Silk Culture.
The Anti-Gold Mortgage Bill.

There is no reason why the passage of these bills should be delayed. Their justice and needfulness are unquestioned. They have been considered and discussed until every Senator and Representative has been thoroughly informed as to their merits. If he has not, it is his own fault, for he has had every opportunity. The bills can be passed as well next month as next session. If they are not somebody will be held responsible for the future.

EVERYTHING points to the fact that the acreage of cotton in the South will be decreased fully 20 per cent. below that of last year. The Charleston *News and Courier* says that in South Carolina many planters have not put over five or 10 per cent. as much as last year, and on some large plantations not a seed has been planted. It estimates the decrease in the State at fully 25 per cent. This should suggest to those who have not marketed their cotton that it is a good thing to hold on to. We are liable to go to extremes in this country, and the reaction from planting too much cotton last year is probably the planting of too little this. The surplus of cotton has been greatly exaggerated, and there was no reason in the world for the recent strong decline in price. We incline to think that cotton will be King again next Fall.

THE AMERICAN FARMER *is only $1 a year.*

OUR WEATHER CHARTS.

Our weather charts in this issue are of peculiar value. They show at a glance the precise extent of the unprecedented rainfall, which has caused so much trouble in the Interior. This visitation will have a most important effect upon all the crops in that widely-extended region.

Our readers should study these charts with the greatest care. After they once understand them—and but a few minutes' study will enable any intelligent man or woman to thoroughly understand them at a glance—they will be found to be an infallible guide to the fluctuations in prices of produce. They contain exactly the information that the operators and speculators in produce in the large cities obtain to guide them, and these men go to great expense to get this information, which we offer our readers free. Anyone who familiarizes himself with these charts, and follows them as they are published in THE AMERICAN FARMER, will know just as much about the probable course of prices of grain, etc., as the best-informed produce dealer, and can come to as solid conclusions.

This feature alone of THE AMERICAN FARMER is worth vastly more than the subscription price.

AT the bidding of the patent medicine advertisers, the "free, unterrified, unshackled" American press rises up and howls in concert against the Pure Food Bill, without stopping for an instant to acquaint themselves with its provisions. There has never been a more humiliating exhibition of the subserviency of a great portion of the papers to selfish considerations. The patent medicine men yelled before they were hurt, and at their command the advertising agents circularized the newspapers that they must attack the Pure Food Bill. As a matter of fact, no honest patent medicine man has the least reason to fear injury from the bill should it become a law. It expressly forbids making their formulas public, at least until after a regular trial in court, and a conviction on the charge that their compounds are inimical to public health. This will have no terrors for 999 out of every 1,000, because their preparations, even if not beneficial, are certainly harmless. But it was enough for them to fear they might be hurt, and hence the clamor against a measure which is demanded by the public health and the pecuniary interests of the public.

EVERY week this country sends $4,000,000 in gold abroad for farm products that should be raised on our own soil. That $4,000,000 a week, or $200,000,000 a year, would pay off many farm mortgages, if put into the pockets of our own husbandmen.

"CHARACTERISTICS OF INSECTS."

The first portion of this article, which appears in this issue, will be of the highest value to farmers. Prof. Riley—the author—is acknowledged to be the leading authority in the world on insects injurious to agriculture, and what he says on this subject will have an unsurpassed interest. As a great favor to our readers, we are allowed to print these extracts from a book upon which he has been at work for years, and which will be published by the Smithsonian Institution.

LEGAL HONESTY IN OHIO.

An Ohio law: "It shall be unlawful for any person or persons to sell any wool on the sheep's back, or otherwise, containing any unlawful taglocks, or any unwashed wool of any kind, or black wool or parts of buck's fleeces or other substance foreign to the fleece or fleeces which is calculated and intended to defraud the purchaser thereof."

Such a law should be on the statute books of every State in the Union.

COME AND SEE US.

All farmers visiting the National Capital are cordially invited to call at the office of THE AMERICAN FARMER, 1729 New York avenue, just west of the War, State, and Navy Departments, where they will receive a cordial welcome.

SOME members of the House of Representatives, who think farmers have short memories, want to cut down the appropriation for the Rural Free Mail Delivery from $200,000 to $100,000. Why should the farmer have to wait several days for his mail, and then go after it himself any more than the man living in the city?

HEAVY as are the taxes in some sections, and devouring as mortgage interest may be, yet bad roads cost the farmers more every year than all the taxes and all the interest combined. It is a wholly unnecessary burden, too, and one that could be easily thrown off with a little united effort.

Ask all your neighbors to subscribe for THE AMERICAN FARMER.

RAISE CLUBS.

We want every one to try to raise clubs for THE AMERICAN FARMER. It is a splendid journal, and will find favor in the eyes of all who see it. It ought to be very easy work to get subscribers. We will make good inducements for sons and daughters of farmers to get up clubs. Write for terms to club-raisers, and premium lists.

COMPLIMENTS.

"Will be Enjoyed as a Blessing."

I have just received a sample copy of your elegant farming journal—THE AMERICAN FARMER. Allow me to congratulate you upon your choice of such good, bold, fair-sized type for the make-up of your paper. This will be looked upon and enjoyed as a blessing by many thousands of your elderly readers, who have learned the value of human eyesight.—HENRY TALCOTT, Dairy and Food Commissioner of Ohio, Jefferson, O.

"In Advance of All."

I read a number of farm papers, but must say that in many respects THE AMERICAN FARMER is in advance of all that come to me. For one thing, it is not one-fourth advertisements.—J. A. NASH, Monroe, Iowa.

The Best Agricultural Paper.

I have been a subscriber, reader, and friend of THE AMERICAN FARMER for 40 years, and if I live so long I would like to read it 40 years more. It has been in the past the best agricultural paper I know anything about.—JOHN M. REED, Box 14, Frederica, Del.

Much Pleased.

I have been very much pleased with the appearance of THE AMERICAN FARMER since its publication in Washington City.—H. B. BATTLE, Ph. D., Director North Carolina Agricultural Experiment Station, Raleigh, N. C.

Improving It Very Much.

My father took THE AMERICAN FARMER when I was a child in Anne Arundel County, Md., and I have grown up with it. I think you are improving it very much.—J. E. SANDS, Fairmont, W. Va.

Its Absence Missed.

I have been a subscriber to THE AMERICAN FARMER for years, and I am pleased to say that I am at a loss when it does not come to time.—SQUIRE A. L. MCBEE, Greenville, S. C.

An Old Subscriber.

I have been reading THE AMERICAN FARMER ever since it was first published. I am now nearly 80 years old.—ROBERT R. MOORE, Sandy Springs, Md.

A Grand Journal.

It seems to me a grand journal, so far as I have read it.—T. M. PAXTON, McConnell's Mills, Pa.

THE best way to make money plenty is to keep more of it at home. The best way to keep it home is to buy less abroad, and raise more in this country.

A SPECIAL OFFER.

The American Farmer for the Rest of 1892 for 50 Cents.

In order to extend the circulation of THE AMERICAN FARMER and give a great number of people a chance to become acquainted with its many good points, we will make a special offer: *We will send the paper from now until Dec. 15, 1892, for 50 cents.* This is a splendid opportunity to get a vast amount of the very best reading matter for a very small sum. Do not fail to embrace it.

Address

THE AMERICAN FARMER,
1729 New York Ave., Washington, D. C.

"Vas Marriage a Failure?"

Vas marriage a failure? Vell, now, dot depends
Altogeddher on how you look at id, mine friends.
Like dhose double-horse teams dot you see at der races,
Id depends pooty mooch on der pair in der traces;
Eef dhey don'd pull togeddher righdt off at der start,
Ten dimes oudt of mine dhey vas beddher apart.

Vas marriage a failure? I ask mine Katrine,
Und she look off me so dot I feels pooty mean.
Dhen she say: "Mr. Strauss, shust come hear eef you bleaze."
Und she dake me vhere Yawcob und leedle Loweeze
By dher shnug trundle-bed vast shust saying dheir prayer,
Und she say, mit a smile: "*Vas der some failures dhere?*"

—*Yawcob Strauss, in the Boston Pilot.*

By The Editor's Fireside.

NOT long ago I was talking with a friend regarding a gathering of farmers and their wives, who had assembled in convention called for the purpose of furthering the interests of farmers generally. She said that rarely had she seen a company of men with more thoughtful, strong, energetic faces, clear eyed and stalwart in form; in short, a splendid type of manhood. "But, ah!" she added, "I cannot say the same for the wives—worn and weary, half of them with the marks of pain upon their faces, looking at least 10 years older than their husbands. I could not help wondering why this was, and whether it was a necessary consequence of lives necessarily drawn into narrow limits, with but little to vary the monotony of the days, from Spring to Autumn, and from Autumn to Spring again.

We have all heard the same thing, over and over again, and I have received hundreds of letters from farmers' wives embodying the same thought—that the conditions of their lives were such as to preclude self-improvement to any extent or variation from the daily round of duties which must be accomplished in any farmer's house, whether their possessions count into the hundreds of acres or comprise only a few which, however, must yet be cultivated. It was not that these wives were complaining of their husbands—except in a few cases—but that they were reaching out for something that would give them surcease from such unvarying monotony. There are no lectures, no concerts, no entertainments of any kind to attend, and but little to hear except the small talk of the neighborhood. Much of the time they are too weary to read, even if reading matter is plenty.

Statistics tell us that of the insane in asylums the largest per cent. among women is made up of the wives of farmers. No doubt this is the result of the utter stagnation in the lives of the majority. Men upon the farm are out in the open air; they are driving to the neighboring towns; they must go to market, and in these ways they come in contact with different people and obtain a wider range of thought, which gives them renewed health and vigor. There is nothing which will sooner dry up the sources of life than the unceasing following of a rut, from the sides of which not even a glimpse can be obtained of other skies, or a breath of fresher airs.

This difference should not be. Often it grows out of the thoughtlessness of the husbands who do not see, or cannot understand, that their wives need any change from home-life and duties in which the days pass into weeks, the weeks into months, and the months into years with but small variation. They do not recognize the absolute necessity for every human being to have change, rest, and pleasure—three things which will do more to bring happiness and health and prosperity than can be measured.

I remember reading not long ago a pitiful story of an old farmer who came aboard a train bound for Chicago. His face was careworn and haggard, and full of some recent trouble. Presently the stranger with whom he had taken a seat laid aside the paper which he was reading, and the old man glanced wistfully into his face, saying, "I am goin' to the city for the second time in my life. The second time," he repeated, after the stranger had uttered an interrogatory, "Yes?"

"Thirty years ago I went there after a wedding suit, and I am goin' back there to-day for a coffin and a shroud for the little woman that—married me." After a pause, while he looked out upon the dreary landscape, he began again.

"You don't know what it is to live and work long side of a woman for 30 years, day in and day out; to find her always patient and willing and workin', and then leave her layin' dead and cold with her worn-out hands clasped on her breast."

Again a silence, and then again he began this time repeating her last words:

"'David,' said she, 'it is so restful—so restful,' and I took hold of her hands. 'Is that you singin'?' says she; 'Go on.' But I hadn't sung a word and couldn't a done it. 'Go on, David,' says she, 'and I will be a restin', for I'm so tired,' and she went to sleep and woke up in eternity.

"And do you know, stranger, them words of her'n have set me thinkin'. Poor, tired soul! And I never thought how much she needed rest. I thought, as I sat there watchin' her breath a-goin' out last night, that mebbee we'd made a mistake of it all. We never thought of it while we was a-workin' and a-stintin' and a-savin'—tryin' to make both ends meet and to lay up something for the children. But I thought about it all last night when me and her was a-waitin' for the last. She never had no pleasure. She never took no holidays or visited like other wimmin. She raised the children and slopped pigs and milked cows and churned butter and cooked for the harvest hands. I never thought or knowed how she done it all till I saw them poor, crossed hands with little white posies in 'em. Some 'un o' the neighborhood put 'em there, and it kinder choked me when I looked. I knowed she'd never had no time for posies when she might have smelled 'em. She didn't have time for nothin' but thorns, mister, and—that's what hurts me."

I have wondered many times since reading that, how many could repeat the same story, with little variation, and have it fit truly to their own cases. As I said before, it need not be; it should not be. To-day there are many ways in which farmers' wives may find means of broadening out their lives, especially if they have the sympathy and encouragement of the husbands whose right hands they are in all that helps them to prosperity. A little thought, a little care, a little unselfishness on the part of those husbands, and this story need be told but seldom. I hail with pleasure the growing increase of interest in the farmers' gatherings which bring together the women and give them food for thought, and set them into a different groove from that which they have so long followed. With broader lives they will make home happier, be better mothers to their children, and more useful members of the community.

* * *

A YOUNG girl writes a letter asking for advice upon a certain matter in which she differs from her mother. She is away at school, from which she expects to graduate after two years more of hard study. Her name is Ruth; but as there are many Ruths in the world, or at least many girls who are placed just as she is, I shall hope that the words of advice I may give will help others as well as my correspondent:

You tell me, Ruth, that your mother has written you not to form the acquaintance of boys in the neighboring college or in the village in which your school is situated, and you say that if you obey her you lose a great deal of pleasure. You cannot see why she is what you call so arbitrary, for surely there can be no harm in your knowing those who are studying just as you are, and who are probably just as good and have parents quite as respectable.

That may be all very true, but does it not occur to you that your mother has had a great deal larger experience in the world and the world's ways than you have had, and that she is hoping by giving you the benefit of that experience to save you from what may cause you in the future a great deal of trouble? Remember this always: Her greatest desire is to make you happy, not only now, but to have your years hereafter full of joy. She risked her life to bring you into this world, which may be one of light and joy and beauty if taken intelligently, or full of pain and darkness if what we call necessary laws are disobeyed. You may not see why you are in danger of any disobedience of law by doing what your mother does not wish you to do. Even if you do not it is wise, to say nothing of what of duty you owe to her, to believe and act upon that belief that she knows what is best for you.

Do you ever think of the self-denial, which is really self-abnegation, that she is bearing in sending you away from home and leaving it desolate without your presence? You cannot conceive what this means to her. You do not know how every morning she wakens up to the consciousness that the child which she carried under her heart and bore in her arms through infancy, watched over through childhood until you seemed a part of her very self, had gone out from home to form new friendships, to find happiness apart from her, and to live without her presence. You, with your life before you, with the bounding pulses of youth, full of joyous anticipations, with eager expectations of what the future is to bring to you, looking out upon the world full of wonders—you cannot have the faintest conception of what it means to her to sit down day after day without your presence, without hearing your footsteps, your gay laughter, without meeting the loving glances of your eye or catching the music of the word "mother" from your lips. It does not matter if your brothers and sisters are with her still. You are not. Each one has an individual place in that mother-heart which no other can fill. Knowing this, if for no other reason, Ruth, you should be glad and happy to obey every suggestion which she makes, being sure that it is love that prompts it, and mother-love, the sweetest and truest that the world can offer.

Aside from this, however, is the fact, the importance of which you cannot estimate but which she can, that you have no means of knowing the character of chance acquaintances introduced to you in the way which these must be. Of course, the few who may be presented by your teachers she might to a given extent accept. She does not desire you to be without society, nor does she want you to feel that you may not have friendships with those of the opposite sex; but she wants these formed upon a basis of a knowledge of character.

From what you tell me I am very sure that her letter bears no arbitrary construction; she simply does not want you to give your precious hours to social pleasures that will unfit you for what you are sent away from home to do. Now

is the time in which you are to gain what will help you to live an intelligent and useful life. Anything which interferes with that should be avoided. That, my dear Ruth, you are sensible enough to see for yourself, and you are also sensible enough to know that it is far easier to enter into social relations that may not prove to be well for you than to withdraw from them later.

Of course, you see the drift of all that I am saying to you. I would have you obey your mother's wishes, no matter if they seem to you needless; no matter if you cannot understand that there is possible danger in doing what she requests you not to do; no matter if you are certain that you can do these things without harm to you or hindering your progress. In the some-time you will understand, you will know, just why your tender, loving mother gave you what seems needless caution; you will perceive that there is method in what appears almost madness, because there is to you no reason why you should do any different from the other girls who are not so affectionately admonished.

HOUSE-CLEANING SEASON.

Making Ready for the Summer.

We are now passing through the season that tries women's souls, to say nothing of the men, who always feel themselves so aggrieved during the annual upturning, and declaim aloud or under their breath about its uselessness. To the discomfort of it, women add the most intense weariness, unless they enter into it with a wise forethought. The best methods of accomplishment in various directions are none too good, and it is for this reason that I am going to give a few hints in regard to the care of carpets, and, perhaps, one or two other things.

Of course, the most desirable thing to do is to send to a professional, but as that can only be done in cities, and not always there, some other way must be taken. First, let all the dust be beaten out, in whatever way is most convenient, After scrubbing and drying the floor, tack the carpet down carefully, and then, with a scrubbing-brush, go over it with a preparation made of two quarts of liquid ammonia, one of alcohol, and two of water. This mixture should be put into a flat pan to the depth of about a half inch, and the brush wet in that. If the mixture becomes soiled, then renew it. This will take out the grease spots. Have ready after this another mixture, which must be prepared beforehand, and is designed to restore the colors. Slice two pounds of good brown soap and boil it in two quarts of water with half a pound of washing soda. After this is thoroughly blended let it cool until lukewarm; then put in a half pound of liquid ammonia and one half pint of alcohol.

When this is done, then wipe the carpet off with a towel or dry cloth to remove the moisture. It is also said that ingrain carpets are greatly benefited by being scrubbed with a thick mixture of bran and water; after the scrubbing they should be well washed and wiped; when dry sweep them thoroughly. After this is repeated two or three times, the carpets will look very clean and bright.

After the carpets are thoroughly cleaned, then the furniture must be polished. If the housekeeper does not care to buy some of the furniture polishes that can be found, she may take the method pursued by cabinet-makers, which is described in this manner: First wash the wood carefully with soap and water, and let it become perfectly dry. Then rub the polish, made as follows, over the article, with perfectly clean flannel: To eight tablespoonsfuls of melted beeswax add two tablespoonfuls of melted rosin, and a small teaspoonful of Venitian turpentine, and mix it thoroughly. While the turpentine is warm stir into it six tablespoonfuls of rectified oil of turpentine; let it stand for 24 hours. After the first rubbing, a second application must be made, leaving an interval of a half hour.

This is a very good preparation, but is considerable trouble to prepare, and there is no difficulty now in buying polish equally good.

In the May *Delineator* I saw a way to remove bruises from furniture, and many housewives will be glad to know that this can be done. Of course, the fiber of the wood must not be fractured. Where it is simply dented, lay several thicknesses of cloth wet with warm water upon the place, and then hold near it a hot iron to maintain the warmth. This will swell the wood to its natural condition.

SPRING AND SUMMER STYLES.

What Fashionable People are Wearing.

It will be a pleasant thought to many that Dame Fashion has had some consideration for the women who have made such strong protests against long skirts for the streets. Recently some of the most fashionable dressmakers have made up dresses with round skirts that came only to the ground, yet just escaped touching. These skirts are the favorite bell-shaped, with the bias back, but are rounded off to avoid the necessity of lifting or taking up.

One of the most popular colors this Spring is green, and it is introduced into the trimming of very many of the dresses, besides being used for the whole garment. One color with which it is a favorite combination is tan.

The novelties in Summer silks are what are called foulards. They are changeable surahs, many of them coming in dimly-defined stripes, which are irregular, speckled with black. There are also speckled and plaid silks of gros-grain coming in small squares dotted with black.

At present the hats are of medium size, with brim broad in front and back, but very narrow at the sides. No doubt the large hats will come with the Summer. One novelty of the day in their trimming is green flowers, which are quite fashionable, and which are taken from the fancy that has raged for changing natural flowers into green through a chemical preparation, so that we have green carnations, green roses, and green lilacs.

It is decidedly a pleasant thing to most women to be able to leave out the linings to their skirts, and yet be in style. It makes a great difference in the weight. Among the imported gowns, in fact, most of them, come with facings of silk to which is stitched the pinked or hemstitched ruffle. Of course it necessitates the wearing of thicker petticoats. The latter are worn shorter than last year, which is a great improvement.

A favorite wash goods this Spring is cotton crepon, which retains its freshness after it has passed through the laundry.

The one marked feature of the styles is the long waist, which must be had somehow. Persons with short waists can produce the effect by carrying the close-fitting waist down upon the hips and having the back long.

Velvet is combined with almost all fabrics, even in some cases with ginghams, which, however, is not advisable, unless one wants to have the trouble of removing it whenever the dress is washed. Sometimes it appears only as a binding to the sleeves. Speaking of sleeves reminds one that all kinds are worn, providing they are rather loose and rather high at the shoulders. Extremes in either way are to be avoided.

I.

A milliner's trick,
Quite Frenchy and chic,
A chip, with some posies on it;
A feathery spray,
And a ribbon gray,
And there is your beautiful bonnet.

II.

An itemised page,
The victimized's rage
A seething ne'er sec'd in a sonnet;
A shudder and shrink
At the nightmare in ink,
And there is the bill for your bonnet.

WORK FOR BUSY FINGERS.

A Variety of Things Pretty and Useful.

COIN PURSE.

Take a piece of golden-brown velvet nine inches long and four or five wide; line with a piece of thin gold-colored silk. Sew the edges together about three inches at the ends; gather the ends firmly and finish each with a gold silk tassel. Slip two gilt rings on it to complete it.

SOFA PILLOW.

Cut out a triangle of chamois skin and button hole in the corner a Roman-key pattern or any pretty design with blue embroidery silk. Catch the points together and between the embroidered corners insert puffings of blue silk, graduated somewhat narrower toward the center of the cushion, where a large bow of satin-edged blue gross-grain ribbon is placed to conceal all the joinings. Hair, sweet grass, or balsam of fir may be used to fill the cushion.

WATER-LILY DOILY.

Water-Lily Doily.

Fringe out and button-hole two sides of a fine linen doily. In the corner inclosed by the unfringed sides, embroider a water lily in white silk with yellow stamens. From the lily down the two sides to meet the fringed sides embroider brown-green leaves.

WALL PANEL.

This is a pretty panel to hang near a writing desk for holding cards and letters. Take a piece of cardboard 10 inches long by 15 inches wide. Curve the top and then cover with corded silk, or if something cheaper is desired, heavy white linen. Paint or embroider a bunch of violets near the round top. Below put six flat pockets, three on a side, decorated with smaller sprays of violets.

LAMP-SHADE FOR A BANQUET LAMP.

Take pink India silk and full on to a wire frame with a deep pinked flounce. Over the silk gather pink chiffon and put a full ruching around the top. Where the flounces are sewed on fasten pink roses tied with bows of narrow olive-green ribbon.

Breakfast Menu.

Fruit.

Farina. Sugar and Cream.

Broiled Chops. Stewed Potatoes.

Muffins. Toast. Coffee.

SPICE CAKE.

One pound of raisins seeded and chopped; one level teaspoonful of soda dissolved in a teaspoonful of warm water and stirred in one-half cupful of molasses. Stir this in one cupful of sour cream and one cupful of brown sugar. Beat in this for two minutes three and one-half cupfuls of pastry flour; add one tablespoonful of cinnamon and allspice each; then the raisins well floured. Bake in a moderate oven for one hour.

JOB'S TURKEY.

Use two pounds of veal steak; stitch the edges together except an opening to receive the dressing. Make a dressing of bread crumbs moistened with milk and seasoned with butter, pepper, salt, chopped onion, parsley or sage. Stuff the turkey, stitching up the opening, and dredge with flour. Put a little butter and water in roasting pan to baste with, adding more water as required. Roast in a moderate oven an hour, making gravy as for turkey.

SHEEP AND WOOL.

Clippings.

It is said that a good way to rid cattle of lice is to wash them frequently in water in which small potatoes have been boiled.

Grass is the foundation of success in sheep-raising. In other words, pastures are of the first importance. These may be classed under two heads—natural and cultivated—those sown by man and those without the provision of man. These give us pastoral and agricultural sheep husbandry.

It is not so important now as formerly that a sheep should live, bear lambs, and shear fleeces for 10, 15, and even 20 years continuously. Much depends upon the breed, but there is a period in the life of each when best results are impossible. It is prudent, therefore, to look upon this question from a money standpoint rather than sentiment.

The inquiry for lamb mothers for next crop has already begun. The increasing demand for lambs has given room for a new branch of the sheep industry in the way of a market for ewes in lamb. Lamb mothers now come from the Pacific Coast to Atlantic Coast lamb-raisers. The piney woods of the Gulf Coast offers an opening not yet sought, but will be very soon.

A valued friend and a successful sheep-raiser in West Virginia writes: "I sell my lambs one year ahead of date; that is, in the Summer of '91 I engage lambs to be delivered at a stated date in the Summer of 1892. Prices range from five to six cents per pound, owing to quality and time of delivery. I weigh them up here at home. I send a good many car loads of lambs and sheep to Baltimore.

It is regarded as sound practice to expand the production when prices are low and shorten at times of over-supply. This cannot apply so well to some industries as others, especially to the live-stock industries. This rule has been disastrous to the sheep business in particular during the last 30 years. It is the better and safer plan to keep an even, steady hand right along through depression as well as prosperity. It is the man that has his plate right side up that catches water when it rains. If prices are low it is a certain fact that there will come a reaction.

Sheep in Virginia.

A man in Virginia asks: "What is the best kind of a sheep for my farm, how much will such a sheep cost, and what will be the probable profits on my investment?"

[Will not some gentleman in Virginia who has experience in sheep-raising help us out in this matter?—EDITOR AMERICAN FARMER.]

The Sheep Pays for the Follies of its Owner.

Senator John M. Palmer, of Illinois, says his flock of Oxford Down sheep on his farms has paid for all his follies in experimenting with fancy, high-priced horses and dairy cattle. As much is rarely said of any other domestic animal.

THE COTSWOLD SHEEP.

The Oldest Type of Long-wooled Sheep in England.

The Cotswold breed of sheep are the oldest of the types of long-wooled sheep in England. They are natives of the Cotswold or Cotteswolde Hills, which run through the eastern side of Gloucestershire in a direction from southwest to northeast. The name comes from the practice in early times of protecting the sheep from the inclemency of the weather, and during Winter in cotes or low sheds, and wold, indicative of their feeding grounds. It may be significant, as claimed, as to the origin of these sheep, since the word cote, only applied to this breed, indicates their Eastern origin. 1 Samuel, 24: 3, and 2 Samuel, 7: 8, "sheep cotes" are referred to.

Cotswold sheep have been highly appreciated in England from the very earliest period of history. The quality of their wool, suited to the costliest manufactures of Belgium and Spain, gave a

tremendous value to Cotswold fleeces. Rapin, in 1341, says Belgium imported their wool to the amount of 2,640,000 pounds, at four shillings per pound, which, at the value of money then, would amount to $13.75 per pound of our money.

In 1342 the King sent great quantities of wool to Spain to redeem Queen Philippa's jewels, which had been pawned there for £2,500. We may safely infer that these wools were from the Cotswold breed, because in 1467 Stowe, in his Chronicles, tells us the King, Edward IV., "gave license to pass over certain Cotswold sheep into Spain." This desire on the part of Spain for Cotswold sheep has caused some to try to believe that the Cotswold were the origin of the Spanish merino sheep. Youatt, however, shows that "these long wools and long-wooled sheep that were sent to Spain were not designed to mingle with and improve the wool or the breed of the migratory sheep of Spain, but to form a lighter serge-like fabric required then by the wealthy classas and Mahometan costumes." Youatt says Stowe is in manifest error when he attributes any change in the breed of Spanish sheep to the animals thus imported.—Youatt, p. 339.

In 1390, 130,000 sacks of wool were exported from the ports of Great Britain, equaling 47,320,000 pounds of wool. These wools were of Cotswold blood in the main, and estimating on good and sufficient data, the average weight of fleece at seven pounds. (The short-wooled sheep only gave two and a half pounds per fleece at that period.) Markham, a writer on agricultural affairs in the time of Queen Elizabeth, says "that the Cotswold sheep were, as they continued in every period of their early history, a long-wooled and large-boned sheep." Their wool was inquired for, since it was used in the manufacture of fabrics of especial luxury. There can be no question of the Cotswold being one of the earliest breeds of sheep, and that it was one of the most popular of wool-producing breeds. At that time they were large-framed, coarse, slow-feeding sheep; very hardy, and accustomed to travel in search of the short, sweet herbage which prevailed on those limestone hills where they had long maintained themselves.

At this period, better systems of agriculture were introduced, and marked changes followed. At first the changes were so gradual as to be hardly recognized; but as arable cultivation improved, and the down lands was brought under the plow, the sheep were kept in close bounds, and by degrees their outline improved, and the feeding characteristics increased. Turnip husbandry became general, a regular regime of succulent food was sought for and secured, and the Cotswold, like other breeds, began to show the effects in carcass as well as fleece. The demand for food and better farming changed English sheep husbandry from what it had been for centuries—wool—to what it is to-day, mutton-sheep husbandry. The breeding of Cotswold sheep seems to have had no such scientific attention, no such a patron as Bakewell or Ellman. Changes, however, came to the breed that leads us to suspect Leicester blood was infused as the form, symmetry, and feeding qualities were improved. This, more likely, may have occurred, since the class of farmers on the Cotswold hills were among the more wealthy and enterprising agriculturists. Royal and local agricultural societies encouraged live-stock breeding, and sheep breeding had as firm hold upon the English farmers then as now. The Cotswold hills were healthy for sheep. The soil, though naturally a clay and thin, had become highly fertile. The system of underdraining was helpful both in fertility and the quality of feeds grown, as well as the comfort of the sheep thereby improved. The science of sheep-breeding, coupled with more scientific farming, gave prominence to the sheep industry of the highlands and lowlands in time. The Cotswolds are in many points closely allied to the Leicesters, with which they have been crossed for purposes of early maturity and better breeding qualities. Their fleeces indicate the Leicester blood, too, though not so uniformly in flock characteristics as might be desired. The features are either white, gray, or mottled, though the white predominates. The crossing, for greater hardiness, with the downs, may, perhaps, account for the gray and mottled faces. Certain it is the pure white is less esteemed by the majority of breeders on the score of lacking hardiness. The head of the Cotswold is rather large, wide across the forehead; the eyes are full and prominent. The head, especially the forehead and cranium, are covered with wool. The long locks of the forehead hanging down over the eyes have been regarded with favor. A bare head is considered quite objectionable by reputable breeders. A Roman face is sometimes met with, but are not sought for as a mark of high breeding. The neck should be long, moderately thick at the base, and tapering to the head, giving that stateliness to the high-headed Cotswold that is always so attractive. The carcass is long, the back level, the ribs well sprung; the under lines are not so true, and the flank is light, which sometimes is objected to, as it helps to give them a "tucked in" appearance about the flank and hips. They afford, however, a good leg of mutton. The tendency to lay on great thickness of fat on the outside and along the back, as well as on the kidneys, is an objection with fastidious mutton eaters, in the mature animal especially. In the lambs no objection is offered by consumers, though some butchers complain of the cutting qualities of Cotswold lambs being so fat on the kidneys, and tallow is not eaten by good livers; hence, is sold for a low price.

The wool should be long, open, and curly; the staple is not so fine nor so lustrous as the Leicester nor the Lincoln. As a wool-bearing sheep in past, the herding qualities were doubtless of fair quality, but when changed into the mutton sheep, as it is now, they will not endure close herding and maintain its high standard character. Though not so sluggish and impatient of hardship in securing its food, it is given every opportunity in the way of abundant pasturage, without fatiguing travel for its supplies. Its size and great weight should be duly considered. One ewe to about two and a half acres is the rule in England, where best results are expected. A system of hurdling is practiced with ewes and lambs that is very interesting to the American reader. In this system the best results in size of the animals is not expected. The systematic attention to these sheep and to their lambs is so different and so painstaking that one is not surprised that American Cotswold breeders fail so often in making creditable show animals, especially at an early age. The proper conditions and culture of Cotswold sheep are worthy of special consideration, and do not belong to the ruder systems of agriculture found in a new country.

The Cotswold sheep has long been a favorite with American Farmers because of its large size, excellent feeding qualities and early maturity. Their success has depended upon circumstances of feed and liberal treatment. It is possible that Cotswolds require more time for attaining development at a given age in this country than in England; yet there are some very prominent successes with breeders who properly apprehend their wants and needs. There can be no question of Cotswold sheep being a factor of profit when used in connection with the best farming.

LETTER FROM HON. CASSIUS M. CLAY.

The Effects of Kentucky Climate and Food, With Careful Selections, on His Southdowns.

EDITOR AMERICAN FARMER: Your letter of the 6th instant is received, complimenting my flock of Southdown sheep, and myself as well, so that I no longer refuse to answer your questions.

1. I lay down the axiom that all animals, and vegetables as well, are advanced by the favorable climate, food, and selection.

2. Consequently the temperate zone has been the site of advanced life.

3. My native State is foremost in clime, production of feed, and selection belongs to me.

With these data before you, you will not be surprised at Kentucky's high rank in the world of animal excellence.

You saw my flock of Southdowns, and now all confess that I have advanced the type of the flock in weight, wool, and flavor. First, weight comes of uninterrupted growth. The sheep's special normal feed is grass, weeds, and buds or shrubs. Kentucky supplies these in bluegrass, etc., the year round. The land is rich valley and dry, favorable to sheep, and they are not forced to eat coarse or gross food.

Hence, I answer the question, whether the English Southdown mutton sent butchered all over Europe is equal in flavor to mine. I say, no. For my sheep have more variety than theirs, are not so heavily fed on grain, oil cake, etc., and therefore more juicy and of more delicate "flavor." The Welch Mountain sheep for this reason are more delicious than the English Southdowns; but I never ate any Welch mutton, and cannot speak by experience, but by logic I say they are not superior to my flock.

My watermelons have reputation for flavor for the same reason—they feed on decaying sods, and the rich manures make them coarse as pumpkins.

For it is plain that flesh is flavored by the food, as the canvass-back ducks of Maryland are known to be highly flavored by the wild celery on which they there feed.

In regard to size: I am breeding now to a buck of my own raising, the largest sheep of the Southdowns I ever saw, and he is (Record, No. 3,842, V. 4) larger and finer than the son (Record, 3,393, V. 4) of Lord Walsingham's (deceased) No. 10, sold for $750 in England at a yearling.

I doubled in 40 years the weight of my wool, going to six and a half pounds of clean, unwashed wool on young flocks. But now, since the Southdown has risen so much in demand for mutton breeders, I neglect wool as a factor in price. The object now is a thick, fine, oily coat of wool as a protection against rain and cold. I don't care a "continental" who wins—the Protectionists or Freetraders! But I do insist that when we lose the tariff on foreign wool we shall be allowed to buy woolen goods where we please—without shoddy.

I am now sending bucks to West Virginia and North Carolina, a splendid field for sheep culture; and mutton raising is now the best farming business in America, for the railway men are themselves taking a hand.—CASSIUS M. CLAY.

Australian Wool at the World's Fair.

The AMERICAN FARMER in a former issue called attention to the interest of Australians in making a show of wools at the Chicago Exposition that should "lay over" anything the Yankees could get up.

Later, the *Pastoralist's Review* more definitely outlines the plans and hopes the wool-growers and their friends have in showing wools at Chicago in 1893. "The opportunity offered by the Chicago Exposition for moving to obtain the abolition of the American wool duties is one which should be made the most of; that a mere collection of Australian wool, however excellent, will not do much good unless it is supplemented with an effective agitation for pushing our claims."

The United States Government, under the official seal of the Department of State, invited the world, and Australia as a part, to participate in the grandest Exposition of the industries, the prosperity, and kindly feeling on the 400th anniversary of the discoveries of Columbus. This was in the kindliest, most fraternal spirit. While the spirit shown by the Australian wool men in no way implicates their Government in this pretense, it is the very cheekiest affair that has come to the light in many a day.

The sheep men of this country expect to welcome the Australians as honored guests, as generous rivals, as hale fellows well met, as only Americans can do. This declaration of intention to do more than compete with us in their sheep products indicates a mean, unfair, unworthy rivalry that was not suspected. It will serve to open the eyes of our over-friendly but patriotic people, and prepare them to see the importance of greater vigilance in preparing displays for the Exposition. With this note from the Australian sheep men our people will keep an eye on them that may be cordial, but not so friendly as was expected.

We intended to study the men as well as their business methods and results, but we know now what they are trying to do before they begin. By their own declarations we now know what we had already suspected. The Australians have no friendly feeling toward the sheep industry of the United States. They would gladly see our system of protection broken down; they are willing to do anything they can to help break down the barriers, which we feel and they know protects our markets from an avalanche of wool that would overwhelm and discourage the industry in this country. They are willing to come as our guests under the most friendly, generous pretenses, knowing the welcome assured by the Special Commissioner sent from Ohio by the management to work up a sheep and wool show from Australia, with the selfish intention of damaging us. They know if once they can get control of our market they can hold it.

Verily, American wool growing is imperiled by foes within and foes without.

Persian Sheep for America.

It is announced in a London paper that 12 specimen sheep from Bushire, on the Persian Gulf, have arrived, and are consigned to the Agricultural Department, Washington, D. C.

During the last years of the last century and the first of this quite a number of these sheep were introduced, partly as a curiosity, but mainly as an experiment. The famous "Arlington long-wooled sheep of Mount Vernon," much admired and long cultivated by George Washington Parke Custis at the Arlington estate, were a cross of a Persian ram on Bakewell ewes. Persia has three breeds, the fat-rumped, the broad-tailed, and a wild mountain sheep. Jenkinson, a traveler, in the 16th century wrote of Persia: "The people have great store of cattel, as camels, horses, and sheep, both tame and wild. Their sheep are of great stature, with large buttocks, weighing 60 to 80 pounds in weight."

The wool is coarse and classed as carpet wool, though some of it must have been fine, as it used to rival the merino wool of Spain in whiteness; the red was still more valuable. Pallus shows conclusively that the fat-rumped sheep of Persia were the sheep of the Bible, and were the same that Abraham possessed and Jacob improved. The fat of the rump was believed to be due to some influence of the climate and food on which they subsist. This is strengthened by the fact that it gradually disappears when put upon other pasture. They were in much favor by Mr. Peters, of Pennsylvania, early in this century, and were extensively scattered through South Carolina, and are still found along the south-Atlantic Coast. The writer saw them near Savannah last June on low, wet lands in fine condition, where merinos would have been impossible.

The flesh of these sheep is well flavored, but the fat of the rump, more nearly resembling marrow than fat, is highly esteemed both by natives and travelers. In so warm a climate it takes the place of butter.

Ensilage for Sheep.

Prof. Sanborn, of the Utah Experimental Station, declares that "neither steers nor sheep will eat ensilage readily." He must be joking, since the experience of thousands of farmers is just the reverse. We had hoped that ensilage would solve and simplify the raising of sheep for the farms and shambles. We had expected a different verdict for the experiments of so high an authority as Prof. Sanborn has been reckoned. Reading between the lines gives the impression that there must be some mistake about such statements. Prof. S. has had large experience as a close observer and a courageous man with strong convictions. He can be mistaken, though, as well as other men.

Sheep-Shearings in Early Times.

About 1802, with the advent of Spanish merinos, probably to aid in their introduction and as an advertisement, sheep-shearing festivals were in much favor with farmers. Prominent among these shearing festivals, and continued for a dozen years, was one at "Arlington," opposite Washington, the estate of George Washington Parke Custis. The hospitalities of Gen. Custis at these annual gatherings was enjoyed by large collections of prominent men. Georgetown papers of those times gave programs and premiums that indicate the large enterprise felt in sheep-raising, as a part of American agriculture in which Gen. Custis had a National pride.

A Chapter in Progressive Sheep Raising.

At a recent meeting of Kent County (Del.) Farmers' Institute, the afternoon session was used in the discussion of the question: How can we make sheep profitable? These Delaware farmers are all specialists, and practice intense farming. Many of them are large farmers and all are fruit growers. All have dairying in connection with their farm operations. Silos are a part of the farm economy. The soil is sandy and adapted to easy cultivation and all general grain and fruit crops. These intelligent farmers thoroughly understand their business, the situation of the markets, their natural facilities, and the possibilities of their land. Two forage crops are grown on the same land and made into ensilage; scarlet clover comes first, and yields as high as 15 tons per acre. Corn follows the clover, and has been made to give 17 tons per acre, after 80 bushels of ears were taken off and sent to the cannery. Fences are voted out of existence, and are to be no part of the farm expense. Very little land is devoted to pasturage. Stock of all kinds are fed in their stalls or in small yards. Ensilage and soiling are practiced entirely.

Dairying does not pay them, and they are looking after some live-stock industry that can consume their ensilage and forage crops (which they always grow among the fruit trees) and give a profit for labor. Dairying interferes with the handling of fruit more than is desirable. The inquiry was for something that will give least trouble and work in busy shipping season, and be completed and out of the way by the time asparagus cutting begins, say, April 25. These peculiar conditions are well defined and fully decided upon. Two ways of handling sheep were possible—feeding and raising grass and house lambs. The convenient markets and increasing demand for lambs at high prices attracted much interest with these shrewd, progressive farmers. Two questions were to be decided: Can sheep be confined to yards and barns and do well when fed on grass, cut and fed in yards? And can we get lamb mothers in September or October bred to lamb in November or December?

If proper ewes could have been guaranteed, bred, and ready at dates named, 500 could have been booked on orders at the close of the meeting without another question being asked.

THE AMERICAN FARMER is anxious for the experience of farmers on the above situation. The practice of soiling is not new, even in this country, but it has not been extensively used. Is it not possible to make the system profitable in the way Delaware farmers propose?

The furnishing lamb mothers already bred to the trade is a new branch of the sheep industry, born of the necessities of the lamb-raising business, and marks a point in the line of progress that has come to American agriculture as possible as it is new and interesting. Will our friends give their experience on this subject for the benefit of those who are looking ahead?

Chicago recently imported 16,000 sheep, the largest shipment made in nine months.

THE APIARY.

Hummings.

Glucose will prevent the granulation of honey in cold weather. It is very seldom that pure honey will not granulate.

The three single eyes of the bees serve to aid them in their work at night, emitting that mysterious phosphoresence seen in other insects.

A lively interest in bee matters is being taken in West Maitland, New South Wales, where a conference of beekeepers will shortly be held. This colony will send an interesting exhibit to the World's Fair.

After old comb honey has become candied, there is not much chance of successfully reducing it to a liquid form so as to make it suitable for the market. By keeping the honey in a warm, dry room it can generally be prevented from candying.

The Spring has been generally late all over the country, but the beekeepers take comfort from this, owing to the common belief that late seasons are always more profitable than early ones, and also that dwindling is not so severe in late as in early Springs.

Experiments have proven that bees are deaf, so it is useless to beat pans and make other noises to endeavor to stop a departing swarm. The rays of the sun, thrown into the midst of them by means of a mirror, will generally cause a swarm to settle.

When hives are sent in the flat style, there is a liability that the boards will warp a little. To prevent this, the boards should be wet on the concave side and then laid on the floor, wet side down. This will serve to straighten them, and they can then be nailed together safely.

Bees should be handled very carefully, as by crushing any one of them, its life is not only lost, but evil results are apt to follow by reason of the poisonous vapor a dead one emits, which irritates its companions, causes them to become cross, and disseminates disease germs. Unnecessary jarring of the hives causes the bees to become angry, and on approaching them while they are in this condition, one is apt to be stung.

The general interest of those who supply the markets with honey are greatly damaged by the few unscrupulous beekeepers who place on the market dark, unpalatable honey. This stuff should not be forced on the public, as the fact of its rankness tends to lessen the demand for honey. By putting forth only the pure, unadulterated stuff, the best results will be obtained and the pursuit in general will be greatly benefited.

To the farmer's wife, who is generally employed mostly indoors, beekeeping should suggest itself as a pleasant and profitable means of outdoor recreation. In this one pursuit, at least, woman has an equal chance with man as far as profits derived are concerned. With comparatively little help, a woman can successfully attend to a large number of colonies. There is nothing laborious required in the care of bees, and to observe the many peculiarities and ways of these busy insects is interesting as well as instructive.

MANAGEMENT OF BEES.

The First of a Series of Articles on This Subject.

EDITOR AMERICAN FARMER: I propose to prepare a series of short essays on the culture and management of bees, to be published in your valuable paper monthly, or as often as you think best, but not to crowd out other matter of more worth.

The domesticated honey-gatherers, known as *Apis Mellifica*, a hymenopterous insect of the family *Apiaria*, have ever been familiarly known as "honey-bee," God-given, profitable servants to mankind. The valuable, healthful products of this insect, and its singular habits and instincts, have caused it to receive more attention than has perhaps been given to any other, unless the silk worm be excepted.

The culture of bees has taken a rise within a half century, and since I practiced handling them in the ancient method—"box" hives, straw "skeps," and "log-guns."

In bee lore, blind Huber is credited as the author of a scientific knowledge of the nature, ways, and peculiar habits or instincts of bees. Francis Huber was the first who gave impulse to improvement in beekeeping, the first to construct beehives on the sectional principle, which is of any advantage afforded by the "movable sectional comb" hives. Improvements of the Huber sectional hive have been made, notably, by Rev. L. L. Langstroth, who obtained patents on certain points pertaining to the working of "comb-sections." Later still, within a few years (the Langstroth patent dates 1852), Mr. James Heddon patented a novel feature of working "sectional comb-frames," which, to practical beeculturists, affords very superior advantages over all former improvements in hives embodying the Huber sectional principle.

Later on I propose to discuss the subject of beehives. The condition and perfection of the brood-combs and young brood in a hive of bees determines its success and the profit to its owner. Hence, any advantage afforded by reason of properly-constructed hives should be worthy of attention by beekeepers who aim to succeed in the highest degree.

In this month (May) brood rearing, in good colonies, progresses rapidly, requiring the consumption of considerable honey and pollen. Here, and elsewhere in regions where bees do not gather honey until June, beekeepers should be mindful of the fact that colonies, in order to go ahead to the best of their aspirations to reproduce, must have a supply of stores equal to their needed consumption, even though the supply be given by feeding the colonies. In the exercise of this duteous attention, beekeepers should be cautious not to feed more than the amount needed for each day's supply or for a short time, lest the feed be put in the comb-cells surrounding the cells occupied already by the brood, and thus confine the brood nest for breeding space to narrow limits. Queens should have empty cells adjacent to combs occupied with brood and eggs, so they may continue laying to the extent they are inclined.

Much may be gained by "spreading brood," if properly attended; but the spreading, unless it be done in the nick of time—*secundum artem*—might damage the prosperity of the colony. When the bees become so numerous they cover well more frames than contain brood and eggs, and weather has settled warm, the brood nest may be separated in the middle, so as to allow a frame taken from outside of the brood and cells, empty or mostly so, to be put in where the nest is divided, or a frame of comb of which the cells are empty, or mostly so, or a frame filled with "foundation" may be put in for the bees to finish. Draw out the cells, thus giving the queen full amplitude for dropping eggs within the brood-nest. During each successive season colonies may be rendered very populous by judicious spreading of the brood-nest, as I have directed, but I caution such as have not acquired experience in the business of spreading to not try it in a haphazard way. Early in the season it is especially dangerous to meddle with the brood. A change of warm to cold weather or cold nights causes the bees to cluster into more limited space of comb than when the atmosphere is warm, thus leaving a portion of the brood exposed to being chilled to death, a dire consequence of injudicious spreading. Often such chilled brood, on the change of temperature, is again kept warm and fermentation sets in—in common parlance, rots, the dead chrysalis becoming actively putrescent and giving a peculiar stench; and if the fermentation proceeds, as it often does, a virus is developed, every infinitesimal particle of which is deadly poison to animate bee-brood, but harmless to bees in the imago state and brood about emerging from the womb-cell, so records the world's acknowleged beemaster, Dr. John Dzierzon, of Germany. This putrescent decomposition of chilled (dead) brood, and brood poisoned with the virus of such decomposition, was called "foul brood" first by certain German beekeepers whose colonies become infected with this dire so-called disease. Perhaps, in future essays, I will discuss the subject of foul-brood.

TRANSFERRING BEES.

Those who aspire to beekeeping for profit will not keep colonies in old-style box-hives, but will, if at any time they possess such, transfer the bees and contents from box-hives into movable comb sectional hives, so that owners may manipulate the comb sections as circumstances may require. To accomplish this transfer is a bold undertaking for those not experienced in handling bees. Several different ways of transferring are described in bee literature. I began to transfer in 1856, and have continued to occasionally make such changes, and shall transfer a few colonies I recently came in possession of. Each owner of colonies in box-hives may proceed to transfer in any manner according to the means at hand and his notions of the best way of doing the job. My practice is to upset the hive to be dispossessed of its contents, place an empty hive or box on the upturned hive and proceed to drive the bees into the empty hive by drumming on the upturned hive and using smoke. After dislodging most of the bees in the hive operated on, remove the box with the bees to the stand on which the colonies rested, and the upturned hive to some place not far away, and proceed to remove the contents—combs with brood in and honey, taking apart the hive without damaging the comb. The comb containing brood may be carefully placed in comb-frames and secured in proper position by any means the operator chooses. Bent tin clamps, thread, or fine wire may be wound around the frames so as to prevent the combs from falling out, or splints or sticks may be placed against the top and lower bars of the frames and tied together below and above the bars so as to hold the pieces of comb in place a short time until the bees fasten it in, when the appliances for securing the combs within the frames should be removed. The combs not containing brood, whether the cells are empty or containing honey and pollen, may be transferred into frames in like manner. When the transfer into frames has been accomplished, remove the driven bees from where the hive stood, and place a frame hive on the spot. Put therein the frames having the brood, and on each side put the frames of comb or frames of foundation. Afterward allow the bees to occupy the transferred combs of brood and all. While making the transfer young bees (brood) will emerge from the matrix cells. Operators can care for such bees and put them in the hive rather than allow them to be sacrificed. If the transfer is performed at a time when there is dearth of nectar, robber bees will prove very troublesome. A tent of ample capacity affords protection against robbers, or a grand smudge near the transferring answers to keep bees from troubling.

Spring dwindling is one of the dangers that beset beekeeping and imperil colonies. Dwindling occurs to some extent during Spring, Summer, Fall, and Winter. Dwindling occurs by reason of certain different causes, the most common one being the failure of colonies to rear brood to the extent required to maintain an equal populous condition of the colony by reasons (often) of queens failing to supply sufficient eggs in due season, and perhaps workers sometimes mismanage breeding affairs; besides, the contingencies of unfavorable weather, chilly temperature and undue careless exposure while the weather is fickle in changes of temperature. Colonies in a normal condition will reproduce more than equal to ordinary losses of old or imago bees, providing, however, brood rearing goes along, as it naturally should. Unless colonies are blessed with first-class queens, Spring dwindling will be mooted and whooped up in all the bee periodicals. Success in beekeeping very largely depends on the prolificness of queens used. No such beehive as a "non-swarmer" ever was or can be contrived, but non-swarming queens are very common; yes, they have been advertised by certain breeders. It is a law of nature that all colonies of bees that remain in a primevous or prime condition will multiply individually and multiply in colonies by swarming. The mandate is "multiply and replenish."—C. J. ROBINSON, Richford, N. Y.

Mr. Harbison, of California, has the most extensive bee business in the world, his colonies numbering 6,000. The production of these colonies is 200,000 pounds yearly.

Beekeeping for Profit.

EDITOR AMERICAN FARMER: There is profit in bees, profit of several kinds—entertainment, health, and money; not millions of money, but money enough to sustain life and make it comfortable.

Certainly there is no outdoor employment more delightful than beekeeping. In the opinion of many it transcends all others in the agricultural field. The bees are such marvelous creatures, and their work is of such exquisite nicety, that no one can see it without admiration. It is not the same routine day after day.

A beekeeper of 50 years' experience says that every day discloses something not discovered before. The work in an apiary, conducted on the right principle, is very little during some parts of the year, although considerable is to be done in the Spring and Fall. It is not exclusively man's work; it is woman's work as well.

The first consideration is the hive. On that depends in great measure the success of beekeeping. No one hive may become universal; but there is a feature of all hives, or a way of using all hives, that may become universal. The day of one-story hives is past, as shown by the use of the double hive and the tiering up process.

For experimenters, beekeepers for pleasure, or novices learning the trade of beekeeping, the single hive is good enough; but for the man or woman who keeps bees for profit, who drives the bees to the performance of all they are capable of, the double hive, often increased to two stories and a half, is the one that yields the most with the least outlay of labor or money.

The double hive is of two stories, one above the other, of the simplicity pattern, made interchangeable, with flat cover. The second story, if comb honey is to be the product of the apiary, contains seven wide frames, each with eight one-pound boxes; if extracted honey is the object, the second story contains 10 frames of the same size as the brood combs.

And now, having the hive, what of its occupants? Any kind of bees will do, for the old beekeeper believes that a bee is a bee, and that it does not matter what race he belongs to. The beginner ought to have the Italians, for they are supposed to be a little gentler than the native blacks. But after the beginner passes the season of experiment and apprenticeship, he or she will give little thought to the kind of bees, and will not stop to consider whether bees be gentle or otherwise.

Now, the secret of success in beekeeping lies in this fact more than in any other, namely, in the strength of the colonies. They must be stronger in number than they can be in single hives. To build the colony up to the required strength, it must be fed a little in the Spring to stimulate the queen, so that by the middle of May the brood chamber will be full of bees and the brood combs full of brood.

Just before the trees bloom take out the Winter packing and add the second story. In the second story are placed empty brood combs made the previous year. When the honey comes in from the field it must go into the second story, because the lower story or the brood chamber, in consequence of the feeding, is full of brood, pollen, and perhaps a little of the honey that was fed. Therefore, each crop of honey may almost be harvested separately. That from the fruit trees is removed and extracted as soon as capped, and thus with every crop during the season.

There is no swarming, for the bees cannot swarm if they want to, and with this method there is usually not much desire to swarm, but, to make sure, the queen trap is used all Summer, or at least when the beekeeper is not in the apiary. This is the way to conduct an apiary for profit. The colonies become so large that a half story is added often between the two bodies.

Extracted honey should be the exclusive product of the apiary for several reasons. Comb honey is good enough out of the comb, but in the comb it should not be sold or eaten. The comb—that is, the wax of which it is made—was a provision of nature that the bee might have means of storing honey from one season to another for its own use. It was not intended to be eaten; it is indigestible and unfit for food. Another reason why extracted honey should be the sole product of the apiary is that nearly if not quite twice as much can be produced with the same bees by the double-hive method.

Extracted honey does not sell for as much as comb honey, a strange fact, but easily accounted for when all facts are taken into consideration; but extracted honey may be sold for more than comb honey if sold in white glass jars of such pattern that the purchaser can make use of them after the honey is exhausted. Honey in such jars has been sold easily for 50 cents a pound, giving a good profit for the honey and the jar.

In a fair season, a colony of bees in a double-hive will produce a hundred pounds of extracted honey. By the double-hive method more colonies may be attended to than by any other system, 50 colonies not being too many for one person to manage after a little experience.

And as to honey, let it be borne in mind that the people generally know little of honey. Thousands of tons of honey go to waste every year which might be gathered and sold at a good profit. There is a living—a good living—in beekeeping. In the busiest part of the year, it does not occupy all the time of the beekeeper, if the season was begun right; so that there is opportunity to give attention to some joint industry, such as poultry raising, flower raising, or general gardening. The active honey season covers less than six months of the year, and six months remain to devote in part to some other industry at hand.—JULIA ALLYN.

Can Bees Hear?

EDITOR AMERICAN FARMER: The "bee specialist" may say that bees do hear, but not as man hears. If a row of blocks be set up in juxtaposition and a blow be struck on the outside block, the man with his hand on the block at the other end of the row will feel the blow or the effect of it, communicated to each block and carried through them all, however long the row might be, if the blow be struck with sufficient force.

Thus, probably, does the bee hear or feel by the sense of touch, hears with its feet and antennæ, if the expression may be used. If a beekeeper goes to a hive containing a strong colony and raps on the gently, the bees feel it or hear it and respond immediately by raising the note of alarm.

But if the beekeeper, before the entrance of the hive, within six inches of it, strike with a hammer upon a board, barrel, or any resounding surface, the bees apparently do not hear, for there is no movement among them. Man hears by the vibratory action of the atmosphere—by the air blocks striking together and tapping upon the tympanum or ear drum. If the bees have no ears then the vibrations or result of contact must be carried to them through some other medium—a medium tangible to the bees—a medium, perhaps, which they may feel or rest upon.

In some places even to-day, when the bees swarm, the farmer and his family may make a great uproar by striking upon tin pans, ringing bells and blowing horns. It is useless, for the bees do not hear it, and hence cannot be affected by it.—JULIA ALLYN.

Use of Foundation.

EDITOR AMERICAN FARMER: The unwise use of foundation hinders the bees, spoils the crop, and disappoints the beekeeper. Beekeepers complain that they get "bulging" sections of comb honey; unsalable; usually broken in removing from the hive, and dripping, and except for home use or the extractor worthless.

It is the custom of some beekeepers to fill sections with foundation and cement to the wood on four sides. This is a mistake that entails loss—loss of honey and bees' labor to the end. Foundation is elastic, and when it stretches in the drawing-out process, or is increased by the wax added by the bees, it must bulge out because there is too much of it.

Often bees spend much time, which might be used to better advantage, in gnawing away the bottoms and sides of the foundation. Instinct teaches the bees that there is something wrong; that the foundation, or some of it, is in the way. While building combs and storing honey in them, they want passages under and at the sides of the comb. To shut them out and thus block the way must interfere.

The "starter," so-called, an inch wide is better than the full sheet, but a little more than a starter may be used to advantage. In brood frames, after the foundation is secured to the top bar, there ought to be an inch space between foundation and sides of the frame and two inches of space at the bottom. In one-pound boxes half-inch space at the sides and an inch space at the bottom should be left.

Let the foundation hang free. If this be done, the combs will be properly built and the bees will be aided. If, however, the foundation in a section box falls down, the combs started in the two adjoining boxes may be built into the empty box between. Therefore, foundation must be securely attached, and brood frames must be adjusted to the right distance—an inch and a half from center to center—to insure perfect combs.

Again, it has been determined that bees thrive the best if allowed to build a little comb with the wax they supply themselves. Building comb-working in wax is a part of the regular trade of a bee, and doubtless the bees serve better if permitted to exercise all their functions. If bees built comb as fast as wanted, there would be no use for foundation, but they will not, and in aiding them, instinct, in any direction, should not be disregarded entirely.—JULIA ALLYN.

The Dead Air Space.

EDITOR AMERICAN FARMER: A "dead air space" in hives is considered indispensable, apparently, by some beekeepers. There can be no question as to the utility or good effect of such a space. The outside of the hive is then an outer wall that tempers the Winter wind and the Summer sun to the bees.

The practical beekeeper, however, has several objections, not to the air space, but to the hive, necessary to accommodate such a space.

First. The hive is too cumbersome and heavy for convenient and easy use. A hive in a live apiary that one man cannot move quickly, even if occupied by a colony, may prove a serious hindrance. A single-wall hive with the colony in it is heavy enough.

Second. The cost of a double-wall hive is a sufficient objection to its use. The time of costly hives is past, as far as practical beekeeping is concerned. Expenses must be reduced to the minimum. The single-wall hive, good enough, need not cost over 25 cents if bought flat and in quantity. To give more money for hives is to throw it away. The bees cement the inside of the hive and make it tight even though the cracks may be numerous and wide. Propolis was given the bees for that purpose. If the outside of the hive be properly painted it is as good as any hive can be.

Third. The dead air space is by no means dead when live vermin infest. A better nest for mice, next to the warm brood nest of the bees, could not be made for them than the space between the walls of the hive, and they will gnaw in if the hive does not stand clear of the ground, gnawing through an inch board, and then into the brood chamber itself. Mice like honey. The double wall hive is not likely to be made absolutely tight, with joints nicely, exactly adjusted. If it is, the cost will be increased, and however it may be made, there will be shrinkage somewhere sooner or later, enough to admit the egg of the moth miller, the most determined enemy of the bees.

The writer has seen this dead air space alive with the larvæ of the moth, and filled with the web. This alone is a fatal objection to the double-wall hive. Again, up to the middle of June bees should stand in the sun. The warmer they are early in the year, the stronger will they be when strength counts. In double-wall hives the sun does not reach the brood nest in early Spring. In Winter the single-wall hive is sufficient if a wind break protects. The dead air space, or the hive that provides it, has no value to the practical beekeeper.—JULIA ALLYN.

Robber bees can be stopped by putting wet hay or straw at entrance of the hive.

THE ORCHARD.

Cullings.

The ground in young orchards ought to be plowed deeply, except near the trees.

It has been proven that apples are much better preserved in pits than in house cellars.

If you give quinces a good soil, rich cultivation, and careful pruning, the fruit will almost always be grown at a profit.

A. B. Coleman, one of the largest peach growers in Princeton County, Ky., reports that the crop has not been injured in the least.

Trees should always be set about as deep as they stood in the nursery, or two or three inches deeper, to allow for the settling of the earth.

The best preventives for mildew are sunlight and air; therefore, trees which are subject to it, should be so trimmed that they will not lack for either.

In California, the value of hoeing is so assuredly known that even the orchards are kept under clean shallow culture, and not a weed is left to rob the trees.

It helps the trees to pick off the imperfect specimens of fruit, for as much vigor is required to develop them as if they were the best and most perfect.

The American apple appears to be gaining great popularity across the ocean. Statistics show that 1,300,000 barrels of this fruit were sent to England during this season.

Nearly all kinds of pears have their flavor diminished by being allowed to hang on the trees until they ripen and fall. On an average they should be picked about a week before.

The cultivation of oranges is carried on to a large extent in Georgia. It is estimated that there are now 15,000 groves, valued at $25,000,000, in that State. These groves cover about 70,000 acres.

It has been found that soot, owing to the sulphate of ammonia it contains, makes a valuable top dressing. The amount to be found in soot varies, so that it is difficult to lay down any rule as to the quantity of it to be applied.

Pear trees cannot endure to be sod-choked. They should be washed twice a year with kerosene emulsion, and the sod forked about them. Mulch always, with either coal ashes or sawdust that has been used for beddiug in the stable. Never plow a pear orchard.

The value of bananas has been greatly increased in Central America since it has been developed that flour can be made from them, to contain more nutriment than rice, beans or corn. A large manufactory is being established at Port Limon, Costa Rica.

The prices that are now being paid for fine apples, kept in cold storage through the Winter, should open the eyes of orchardists to the possible profits for them. Care should be taken to put up the best fruit, and there will be profit in storage every season.

The honey-locust tree grows to a great extent in London and Manchester, and in smoke-infested localities where other trees would not live. This tree bears pretty flowers, and is of a hardy nature, taking root and growing in poor, stony soil with perfect freedom.

South Africa has begun to export fine fruits to Europe. Several large cargoes of pears, apples, grapes, and peaches have been received in England in the finest condition, and brought very high prices. Canning is also being tried with most favorable results.

Inexperienced planters when purchasing trees often make the mistake of selecting the largest they can find, because they wish the fruit trees to bear soon. Young trees can be moved more successfully, and soon outstrip the older ones in vigorous and handsome growth.

The peach has a way of bearing at the extremity of its branches. The fruit soon gets beyond reach and is apt to break the branches. A method recommended by Col. Pearson before the New Jersey Horticultural Society is to cut off the main branches of peach trees within one and a half to two feet of the trunk after leaf growth has fairly started.

An orchardist in writing to the *Orange Judd Farmer* objects strongly to making the tops of apple trees so open as to let in the rays of the sun. He says that the direct rays of the sun in a severe season killed nine-tenths of his trees. He now grows his apple trees open on the north-east side only. He says he has seen orchards all through the Western country ruined by the eastern style of pruning.

The powdery mildew which so often attacks the apple, peach, etc., can be effectively destroyed by making five or six applications of the ammoniacal solution of copper carbonate at intervals of about 12 or 13 days. The first application should be made when the leaves are about half developed. Both surfaces of the leaves should be thoroughly sprayed. The cost of this application, aside from the labor expended, is about 10 cents for every 1,000 trees.

Since the recent importation from Japan quite a revolution has taken place in plum culture in this country. The new specimens are so much larger and finer than those formerly cultivated that they have taken the place of the old ones very generally. The Kelsey is possessed of wonderful qualities and the fruit is beautiful in color. Then there are others, such as the Blood Plum of Satsuma, which is a solid purple color; the Ogden, with a bright, yellow skin and firm, sweet, juicy flesh, and the Botan, with a bright cherry skin and orange-yellow flesh.

By the result of a 10 years' test the Hatchet Experiment Station has answered the question often asked as to whether the Siberian Crab can be used as a stock on which to graft common apple scions. Six small yellow Siberian Crab trees were planted in a row with three Williams' Favorites, first a Siberian Crab, second a Williams' Favorite, third a Siberian budded with Williams' Favorite, and so on. The first year the buds grew well, but at the end of 10 years all were dead. The diameters of the Siberians were all over four inches and of the Williams' Favorites three or more, but none of the budded trees were over seven-eighth inches through.

Grafting.

Skilful budding or grafting proceeds on the same principles as the skin grafting performed by the doctors. It depends upon the fact that the moment there is an injury to the inner layer of the skin of an animal, or the inner bark of a plant, technically called the "cambrium," nature sets about healing the wound. In grafting all that is necessary is to bring the cion and this cambrium into close connection, and keep this up until nature heals the wound. Though there are more than 100 different kinds of grafting mentioned in French and German works, they all depend on this one fact, and are mere modifications of the central idea. There is no secret about the process, and the pretense of many high-priced grafters as to processes is sheer humbug. Anybody with good common sense and a faint amount of knowledge as to trees can graft successfully.

The commonest kind of grafting is the root method. This may be done all through the Winter. The roots taken up in the Fall of young trees less than an inch thick are trimmed to four inches in length and cut from the stems, leaving roots only for the cion to be fitted. A sloping cut is made on each, with a tongue, or offset, in the middle of the cut, so as to afford as much contact as possible between the stock and the graft. These being brought into close contact all along the cut, the two are bound together by a strip of waxed cloth. The roots are preserved in boxes of sand, safe from frost, until the Spring, when they are planted.

Whip grafting is the same as root grafting, except that it is applied to stems of young trees which are too small for cleft grafting. In cleft grafting the cion is taken from the young wood of the previous year's growth, or if desired it may be older and even having fruit buds on it. This is often the case when it is desired to test the quality of a new fruit. But generally the cions are one or two-year-old wood. They are cut at the lower end into a wedge shape so as to fit into a split made in the limb of the stock. The two surfaces must fit closely, so that the two barks are in precise contact. Then the interchange of the sap between graft and stock goes on freely, and healing of the wound and new growth take place at once. To insure this the joined parts are protected from the air and drying by a wrapping of cloth over some wax spread over the wound. This wax is a mixture of equal parts of resin, beeswax, and tallow melted together and well incorporated. It is now the custom to saturate strips of cotton cloth with this composition when melted and roll them into a ball for easy use. This should be done as soon as the cion is fitted into its place.

A little shoulder should be made on the cion, so that all the edge of its bark should be brought into intimate contact with that of the stock.

Sharp tools, making clean cuts, are a necessity.

Neither can wealth make a bad man respectable, nor can poverty sink a worthy person below the station his virtues deserve.

Courting in the Balearic Isles.

Of old customs there is naturally greater survival in Iviza than in Majorca and Minorca, which have closer intercourse with the Continent. The Ivicenes are in bad repute as law-abiding people. They prefer, like the Corsicans, to take the law into their own hands. Bloodshed is comparatively common among them; and when a peasant has thus committed homicide, he seldom chooses to wait for the Judge of Assize to condemn him. He evades the island, and finds immunity in Algiers, or on the Continent.

The fair sex are, of course, the chief cause of the more fatal quarrels on the island. To tell the truth, the local methods of wooing a girl seems well adapted to provoke irritation. She receives her suitors *en masse*. Sunday evenings are the conventional visiting times. The damsel then takes up her station in the paternal porch and waits for the young men who have conceived a fancy for her. Each youth has the privilege of sitting by her alone for a limited number of minutes. He must make the most of this opportunity, for the other aspirants will not tolerate an extension of the time. If he does not get up after a while and make way for a successor, his rivals show unmistakable impatience. Nor can one wonder that now and again, when the maiden is peculiarly attractive, the youths find this formal seance too much for their tempers. Though unseemly, it is not surprising that they should quarrel and fight with each other. But whatever happens, the girl has a stereotyped part to play. She may interpose to prevent bloodshed in her very presence; otherwise it is decorous in her to welcome each suitor with the same measure of civility. Not until she has had as thorough experience of them as the Sunday entertainments afford her does she show the preference she feels for one in particular.—*The Cornhill Magazine.*

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DAIRY.

Skimmings.

Milk and cream should not be kept in cellars or other places where there are odors liable to contaminate them.

The standard for milk is four per cent. of butter fat. In Wisconsin the law prohibits the sale of milk having less than three per cent.

The exports from Boston for the week ending April 23 included 28,509 pounds of cheese and 45,715 pounds of butter. This is not as large by one-quarter as the exports for the same week of last year.

About 600,000 cows are required to supply London with the necessary dairy products; 84,000 of these being needed for milk only. Nearly 10,000 are kept in the city itself, and require about 1,000 sheds and 395 keepers. There are 4,000 horses engaged in the daily delivery of milk.

Twice a day is sufficient to feed and water the cows, and if green fodder is given once a day is usually enough. In feeding a cow, care should be taken that the food is healthful; that the animal is comfortable in its surroundings while eating, and that the fodder is not too bulky. If the food of the animal is not relished the results cannot be good.

A new milking machine is reported in England, which will milk 30 cows in five minutes! It works on the suction principle, and the suckers run under the floor to the separator, where the butter is whirled out of the milk at the rate of 7,000 revolutions a minute. There are some difficulties about this, particularly in the matter of keeping everything clean, which will suggest themselves to the practiced dairyman.

The old "butter compound" humbug comes up in an advertisement of a Kansas company to supply a preparation which will make "excellent butter at 5 cents a pound, or sell a sample box for 25 cents that will make 100 pounds of butter." The stuff is a chemical which simply curdles and colors the milk into a resemblance to butter, which has neither the nutriment nor the taste, and in a little while would drive a dog out of a tanyard with its smell.

The using of ice for the preservation of sweetness in milk is an almost universal custom, but exactly why the action of cold on milk prevents its souring is not understood by all. The milk, when it first comes from the cow, contains certain parts of sugar and albumen. The effect of high temperature on solutions of sugar is such as to acidify them; hence cooling prevents the change of the sugar in milk to lactic acid. Cold is also effectual in causing a quicker separation of cream from the milk. There is quite a difference in the specific gravity of the milk and the butter-fat contained in it. The cold has the effect of increasing the density and weight of the water in proportion to its bulk, but has little effect in increasing the gravity of the little globules, which go to form the cream. Thus, while the watery part of the milk is made heavier the buttery part is not, and naturally rises more quickly, just as a cork will rise to the surface more quickly than a block of heavy wood.

"MURRAY" BETTER than GOLD "MURRAY"

There are not many things that are as good, or equal in value to Gold, and VERY FEW that are BETTER THAN GOLD. It is, however, a known fact that there are thousands of owners of our world-renowned "Murray" Buggies and Harness all over the continent, who say they would not give up their "Murray" Buggies and Harness for their value in gold, if they knew that they could not get another of the same kind. Our

MURRAY $55.95 BUGGIES and $5.95 HARNESS

are known the world over and are justly recognized as the BEST and CHEAPEST Vehicles and Harness on the market. We sell direct to the consumer at prices beyond competition and belong to neither the Buggy or Harness Pool or Trust.

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Many Firms Make Big Claims

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ONE THOUSAND DOLLARS with any Carriage or Harness Firm in the U. S., same to be given to any charitable institution by the loser, that we can show more honest and better testimonials for the "MURRAY" Buggies and Harness for the time our goods have been on the market, than any one Factory in the World.

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MURRAY BUILDING.

THE AMERICAN FARM DAIRY.

Greater Knowledge, Thorough System, and Constant Observation Necessary to Success.

EDITOR AMERICAN FARMER: I desire to call the attention of your many thousand farmer readers to the possibilities of the dairy industry, providing one keeps pace with the modern improvements and spirit of 1892. The forced acceptance of many new requirements, if one meets with reasonable success, is a fixed fact; and who can tell how soon the electric spark may be the motive power of very much of our farm work, and we be forced to adopt it or step down and out? The sharp competition of to-day demands improvement in quality as well as quantity, and the farmer of this age must meet it. To hold your place you must equal the best.

The foundation of dairy success rests primarily upon excellence of cows; secondly, intelligent feeding, where economy is the guiding star, and, lastly, the perfect manufacture of the dairy product and its sale. The chances for success and the road to fortune were never better than to-day; but good luck is not a factor in the business.

Test your cows the first thing you do. Consign to the butcher's block every animal that will not pay a fair profit on her daily care and keeping. Fix in your own mind the branch of dairy farming you will do, whether milk selling, butter or cheese manufacture, and never attempt to combine the three. They cannot all be successfully done with any one breed of cows.

You must bend your whole energy and purpose upon one of the three, and fight out the battle of life upon that line, no matter if it lasts a hundred years. I have got a little beyond the first 50 of mine, and I look upon the improving excellence of my butter-dairy herd with keener relish than at any former period of my life. Do not be misled by the breeder's art or information, nor work yourself up in imagination to any of their fancy achievements. Be content with less, and your reports will be more in keeping with the true teachings of the New Testament. Bear in mind that every pound of butter you make from a single cow's milk per day above two and a half pounds will cost at least $1 per pound, and perhaps the loss of a human soul, who reports it. I desire to-day to call attention first to the model-butter cow, because butter is more universally made than any other dairy products. The hard, firm butter, rich in flavor, coarse-grained and of a good, deep orange color, as a rule, must be made from Guernsey, Jersey, or Alderny cows' milk, either throughbreds or high grades. Other breeds possess greater excellence for cheese or milk production, but these I mention have been bred for over 100 years, pure, and for no other purpose. Good, fair butter may be made from other cow's milk, but these butter-breeds are continuous milkers, and respond to generous feeding with profit.

I will freely and frankly admit that villainously poor butter can be and is often made from this, the best of milk (I hope to correct a fault in the lessons I give); also good, nice butter can be made far easier than the miserable, rancid butter of many markets' offering. The dairy heifer that will not produce 150 pounds or more of good butter the first year of her milking experience ought to be discarded at once. I wish mine to go 200 pounds the first year, and mature cows should average fully 300 pounds or more, and if that is done the farmer should never disgrace his cows or the calling by making 10 cent store butter from good, rich milk. I have not sold a pound of butter from my dairy for less than 20 cents for 20 years or more, and we expect and do receive much higher prices the greater portion of the year. In our large creamery, where we make 1,000 pounds or more daily, the amount is so great to handle we cannot do as well, but must throw it upon the market and take the prices that commission merchants can sell it for, and merit alone will determine that. But the farmer who longer persists in milking cows without testing them individually makes an unwarrantable mistake. I have seen many farmers, 50 years old, that have been in the dairy business all their lives, that never made a test of their cows or ever knew to a certainty which ones earned the money or which run him in debt. This kind of management is all wrong, and Governmental or Legislative interference can never lighten the troubles of such a man. I would not say a word against securing to agriculture her fair share of legislation, and I gave four years of the best portion of my life to the enforcement of the best dairy and food commission laws of any State in the Union to help the cause; but I do say it is the first and highest duty of a farmer to be systematic and thorough in all his farm work, and give to it that same care and intelligent thought which is so necessary for fair success in all other callings of man. There is no good reason for his exemption. We should be thankful that our law makers in their great zeal for class legislation have not passed laws limiting the farmer's educational facilities. He is free to acquire all information that he has the capacity to retain or enjoy, and what is still more important to be useful or ornamental to-day. He is compelled to fortify his muscle with additional brain power, or drop out of the ranks and into the arms of the mortgage.—HENRY TALCOTT, Jefferson, O.

The Lessons of Arbor Day.

The influence of Arbor Day in promoting interest in trees and flowers is a happy influence which will not be lost upon multitudes of pupils. Many of them hereafter will trace their pleasure in trees, and is one of the purest of pleasures, to this early training of their taste and observation. The day affords the teacher a golden opportunity of pointing out the relation between the landscape and literature, and they may wisely discourse upon the reason that in the ancient and most objective literature there is the least allusion to what we call Nature.

Not the least valuable of the lessons of the day is the tenderness of feeling toward trees which it encourages. If the children of to-day could once more people the woods and hills with dryads and oreads, they would less ruthlessly mutilate the shrubs and saplings, and look upon a shaved hill-side as on a ravaged village. It is a beautiful holiday in the loveliest season, and we trust its observance will become more and more general.—*Harper's Weekly.*

There is always precious little of anything precious.

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All Diseases of Nose, Throat and Lungs (except last stages of Consumption) surely cured by the New Andral-Bress Discovery. Not a Drug, but a New Scientific Method of Home Treatment. Cures Guaranteed. Sent FREE to all who apply. Try it FREE, and pay if satisfied. State age and particulars of disease. Address, NEW MEDICAL ADVANCE, 61 E. 4th St., Cincinnati, O.

Stable Talk.

A shying horse is a rarity seldom seen in Russia, where blinders are never used.

Manure from animals which have been fed to any extent on turnips or silage is not of much value.

There are about 16,000,000 horses in the United States, and their average value is $65.01 per head.

Powdered charcoal, mixed with bran or any moist chopped feed, has been known to effectually stop slobbering in horses.

Horses are liable to become bad-tempered and wear themselves and their stable floors out if they are not regularly and well fed.

The New York State Board of Health has been authorized by Gov. Flower to expend $5,000 in the endeavor to extirpate tuberculosis in cattle.

The Iowa Draft and Coach-Horse Association will hold their seventh annual meeting at Des Moines on Jan. 10 and 11, 1893. C. F. Curtiss, of Ames, Iowa, is Secretary of this Association.

A simple but effectual way of ridding cattle of lice is to have a pail of flour of sulphur in the barn, and when an animal shows by its actions that lice are troubling it, sift a small portion of the sulphur over its back and head, and the lice will soon disappear.

A California horse-owner recently noticed that one of his animals had a mania for running after and catching chickens. A short while after the horse died, and upon opening his body it was found that he had eaten a whole chicken and the bones had cut through his stomach, causing his death.

The value of good stable manure is inestimable. All solid and liquid manure should be saved, and to aid in this saving stables should be built with clay or cement floors, and sheds should be built to hold the manure. Leaving it in the open air, exposed to the rain and snow, greatly lessens its value.

The only stallion in New England having a dam and grandam, both of which have produced 2:30 performers, is what J. F. Barrett claims for his stallion Westland (2:29¾), by Col. West, son of Egbert; dam, Knox Girl, dam of Aubine (2:19½); second dam, Gretchen, the dam of Nelson (2:10), etc.—*American Horse Breeder.*

A horse can generally be cured of the habit of pawing in the stable by the following simple process: Fasten a piece of log chain, five or six links in length, to his leg just above the knee, by means of a light strap. It should be attached so the chain will fall on the front of his leg, and when the horse paws the action of the chain on his leg will irritate him and cause him to stop.

The Massachusetts Legislature has before it a bill with a fine of $500 or an imprisonment for six months for anyone who, "for the purpose of competing for purses or premiums, knowingly and designedly enters or drives any horse that shall have been painted or disguised, or that represents any other or different horse from the one which is purported to be entered, or shall knowingly and designedly, for the purpose of competing for premiums or purses, enter or drive a horse in a class to which he does not properly belong."

A Short Horn Sale.

EDITOR AMERICAN FARMER: The Short Horn sales of Sangamon County, held by S. E. Prather, J. F. Prather, John S. Highmore, and J. D. Waters, at Springfield, Ill., May 4 and 5, were greatly hindered by rains, which prevailed both days; nevertheless the attendance was fair and breeders from a distance were present.

Mr. S. E. Prather can be congratulated on the fact that in this sale there was sold some of the highest, if not the highest, priced Short Horn heifers for 1892; the prices for his favorites reminding one of old times. Mary, of Riverdale, third, one of his own breeding, and dam also bred by him, bringing $725, to Geo. W. Kyle, Monroe, Iowa; Riverdale Blossom, $605, to H. F. Brown, Minneapolis, Minn.; followed with Forest Queen, of Riverdale, fifth, to C. B. Dustin, Summer Hill, Ill., and Forest Queen, of Riverdale, sixth, $225, to L. W. Brown & Sons, Berlin, Ill., and others, showing that Sangamon County and Mr. Prather can be mentioned as on the top of the ladder for Short Horns.

Mr. J. F. Prather, to make room for his recent importations, sold three Cruickshank bulls at an average of $131.

Mr. J. S. Highmore, one of the oldest breeders of central Illinois, closed out his entire herd, big and little, at less than they ought to have brought, yet, on the whole, satisfactory.

Mr. J. D. Waters, a comparatively young breeder, sold his entire produce of bulls for 1891, realizing an average of $80.50, as even a lot of youngsters as is often found. More may be looked for from this enterprising young breeder.

These sales show that central Illinois and Sangamon County is yet in the lead as a breeding center.—J. G. S., Springfield, Ill.

SWINE.

Weight and Food.

Altogether the most important point to be considered in the raising of hogs for the market is that of the amount of food they require and should be fed each day. It has been experimentally proven that where an animal will make three pounds of live weight per day in its first year at a cost of 10 cents, it will only make one pound a day at a cost of 20 cents in its third year. As the hog grows larger and heavier he requires more and more food. Not only does he require more food to increase his weight, but it is also necessary that he should have a certain amount each day to maintain the flesh and fat he has accumulated. Great care should be taken to observe just when the animal gets beyond the point of assimilation, and he should then be disposed of.

It is estimated that the amount of food a hog requires is two per cent. each day of his live weight. This being the case, it is clearly apparent that the most profitable method is to dispose of the animal while he is yet young, rather than endeavor to raise him to a weight of 200 or 300 pounds, when he will most likely eat up what profit there might have been in him. Up to the weight of 50 pounds a pig increases in weight in proportion to the food he consumes, but after he passes 50 pounds the ratio of gain decreases rapidly, giving less and less growth for the amount or value of food eaten. At 100 pounds' weight it costs 10 per cent. more food to produce a pound of meat than at 50; at 200 pounds weight it costs 24 per cent. more than at 50, and so on. Each pound that the hog gains must be catered to or it will be lost.

Prizes for Pig-Raisers.

The American Berkshire Association makes the very liberal offer of the first 10 volumes of the *American Berkshire Record* as a special premium at the several State Fairs in 1892. This premium will be for "best recorded sow and litter of not less than five recorded pigs under six months old, bred and exhibited by a resident of the State in which the fair is held." Such offer will make the exhibit of Berkshires for this year one of the largest ever known, and creating an interest will add largely to exhibits of other breeds to the very great benefit of the swine industry.

The liberality of this offering may be better appreciated when it is considered that $1,100 will be thus distributed in 22 States and provinces here named, whose fair associations have already accepted the offer, and will make these premiums a leading feature in their premium lists.

It should also be remembered that these special premiums are to be so distributed that a set of these volumes may be secured in each State.

Fair associations that have not already arranged for this Berkshire offering will do well to secure for the breeders of their States a chance for these volumes; and breeders in States that have not accepted the terms upon which these Records are offered should urge the officers of their State fair associations to place their States among those that will have this exhibit.

For information in regard to these special premiums, State fair Secretaries or Berkshire breeders should address John G. Springer, Secretary American Berkshire Association, Springfield, Ill.

The 17 States and five Provinces that have accepted and will make these exhibits are: California, Colorado, Connecticut, Illinois, Iowa, Kentucky, Maine, Michigan, Minnesota, Missouri (St. Louis), Nebraska, New York, South Carolina, South Dakota, Washington, West Virginia, Wisconsin, and the Provinces of London, Montreal, Ottawa, Toronto, and Winnipeg, Can.

Record of Transfers of Pure-bred American Southdown Stock.

Bon Ton, 3220—N. R. Boutelle, Waterville, Me., to C. A. Garland, Bangor, Me.

Boose, 4630; Memo, 4633; Shegold, 4634, and Sinner, 4635—Thomas Beer, Bucyrus, O., to Elting Du Bois, Vigo, O.

Chapman Ewe "1," 1417—John Jackson, Abingdon, Ont., Can., to William Martin, Bimbrook, Ont., Can.

Champion IV., 3152; Champion XII., 3160; Champion IX., 3157, and Champion VIII., 3156—J. H. Potts & Son, Jacksonville, Ill., to Thomas G. Rook, Salem, Iowa.

Jonas ewe "6A" II., 3605; Royal Colman ewe "5," 3602; Queen, 3601, and Missy, 3982—George Baker & Sons, Simcoe, Ont., Can., to A. M. Kent, Jamestown, N. Y.

Laura B II., 3739, and Pauline, 1902, —W. U. Noble, Brecksville, O., to Peter B. Boyer, Library, Pa.

Clay ewe "163," 1733; Clay ewe "285," 1731; Clay ewe "271," 1728, and Clay ewe "173," 1740—G. J. Hagerty & Sons, Hanover, O., to John A. Irion, Gallipolis, O.

Doris, 3943; Dorothy, 3944; Dot, 3945, and Dimple, 3829—Levi P. Morton, Rhinecliff, N. Y., to A. Rogers, Hyde Park, N. Y.

Alexander ewe "1156," 3396; Alexander ewe "1084," 3557, and Alexander ewe "1083," 3394—A. J. Alexander, Spring Station, Ky., to H. A. Frease, Stoutsville, O.

Alexander ewe "1175," 3435—H. A. Frease to Wesley Stewart, Bridgeport, O.

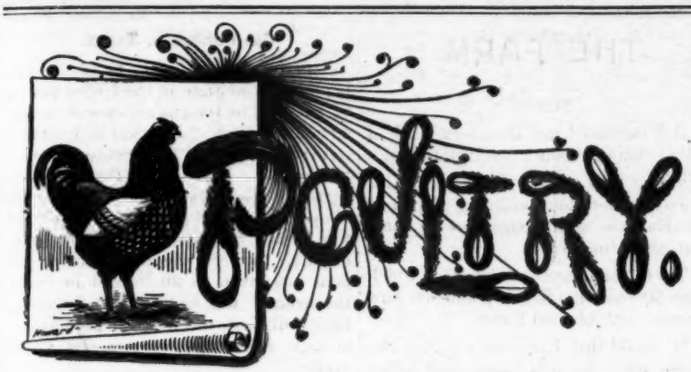
C. M. C. "A194," 2711—Cassius M. Clay, White Hall, Ky., to S. E. Sheets, West Milford, W. Va.

Bettie S., 1903—L. M. Crothers, Crothers, Pa., to George F. Willis, Milnersville, O.—S. E. PRATHER, Secretary, Springfield, Ill.

The Adulteration of Meal.

The adulteration of cottonseed meal is practiced to a great extent among the oil manufacturers. At the mills the meal brings $21, and the hulls only $1.20. The great difference between these two prices leads unscrupulous men to mix hulls with the meal, and by putting 10 per cent. of hulls with the meal they make a profit of about $2 per ton. The inferior article is of a gray color, and if tasted, will be found gritty, unlike the pure stuff.

Anger glances into the breast of a wise man, but it rests only in the bosom of fools.



Cacklings.

Geese, as a rule, are less expensive than any other class of poultry, and are likewise easier to handle.

Incubation is carried on to a great extent in Egypt, and about 75,000,000 eggs are hatched out annually by this process. One establishment alone uses 270,000 eggs.

The effects of underfeeding are apt to be as disastrous as those of overfeeding, and great care should be taken to keep the hens well supplied. Hens, like cows and horses, must have proper care and feeding, or they will not pay their cost.

The whitewash brush is of more use now than at any other time of the year. It not only kills all the young vermin which infest the poultry house, and which multiply very rapidly at this season of the year, but it also purifies the hen house.

As a great majority of the Spring chicks have been hatched, the next step is to see that they are given proper food and pure water. There is no use of letting a hen set on eggs unless you intend to pay careful attention to the young chickens.

All kinds of poultry have strong digestive organs, and by feeding them with food not easily digested, they are kept strong. Their digestive organs need exercise, and it is better to feed young chickens cracked wheat than meal of any kind.

A point particularly to be considered in the raising of poultry is that of regularity in feeding. The most rapid growth is effected by feeding a little at a time, and that often. It pays better to put the chicken on the market soon, when it shall not have cost much for feeding.

If you expect to get eggs from your hens you should give them the proper kind of food which enters into the composition of the eggs. A hen in confinement cannot get these materials, and unless the owner give them to her he need not be disappointed if he fails to receive eggs.

Milk is a very good thing to give to the young chicks that are a week old or under. While it is good to give milk to older chickens, yet it does not do them the good which the young chicks derive from it. However, milk is relished by all classes of poultry, young and old, and there will be no harm done if they are given it as often as convenient.

Is is a wonder that there are any lice in poultry houses after the annual Spring warning of burning the old nests, kerosening the roosts, providing the dust baths, and free use of insect powder has had its round in the newspapers. But for all these warnings in many cases the lice and other vermin are left to pursue "the even tenor of their way."

There are certain ducks, such as the Aylesbury, Cayuga, Pekin, and Rouen, which fare better without water, except it be for drinking purposes. It has been experimentally shown that ducks kept in large runs with only drinking water have done better and grown faster and stronger than those allowed to bathe and spend their time in the water.

To keep lice and other vermin out of the poultry house, its floor should be of cement or earth, with nothing on it that is immovable. The walls should be bare and free from any fixtures under which hiding places may be found. Fresh lime, scattered over the floor and walls at the time the fowls go to roost, will help prevent roup and other diseases.

Young turkeys are probably the hardest to manage of any class of poultry. While young they require but very little food, but when about half grown their real appetite seems to begin. Some people are of the opinion that they cannot be raised in confinement on account of the cost of feeding them, but this opinion has been shown to be false by those who have successfully raised them.

There is no need of a poultry raiser wasting anything that the hens will eat. If potato peelings are thrown to the hens in a raw state there is very little likelihood of their being eaten, but place them in a pot, boil them, and then see if the hens will eat. Of course, there are some vegetable peelings which the chickens will eat raw, and there are some which they will not eat at all, but of this latter kind the number is limited.

A California breeder has claimed to have had found a way in which to regulate the sex of a chicken. By placing a cockerel with two or three year-old hens the eggs from them, if hatched, will produce all hens. If an old cock is placed with pullets the result will be a crop of roosters. This dicovery has superseded the one which was in use before its advent, and by which the sex was regulated by placing a large number of hens with a cock for hens and a small number of hens with a cock for cocks.

There is a friend of the writer's, who lives in a city and is the owner of 15 chickens, who feeds them at a cost of 25 cents a month. This may seem to be a rather wild statement, yet it is true. He purchases a peck of bran for seven cents, half a peck of oats for eight cents, and half a peck of corn for 10 cents. In addition to giving his hens this food, he gives them all the table scraps and peelings of vegetables. Once a week he gets a little meat from his butcher, which he feeds to the hens raw. His hens lay well and are in good health.

New Hampshire is credited with having one of the largest poultry farms in America. This immense enterprise, covering 1,300 acres, is situated on Long Island, Lake Winnepesaukee, and accommodates 4,000 dusks and 13,000 hens. In the incubator house, which is two stories high, 30 machines produce on an average of 120,000 chicks and ducklings annually. There are five brooder houses, to which the chicks are transferred as soon as they are able to walk. The largest of these houses is 500 feet long and 30 feet wide, and accommodates 15,000 chicks. Two hundred acres are used for the cultivation of products necessary for the inmates of the farm.

Turpentine is as nearly a specific for the gapes in young chicks as anything can be. This disorder is caused by a threadlike worm which stops up the throat and suffocates the chick. Absolute cleanliness about the henhouse is a great preventive, and then turpentine comes in as a treatment. For young chicks a small quantity given in the food once a day until the system is saturated with it will be a relief. It is also advisable to give it to the hen when she is setting on the eggs, so that she may be freed from the worms before the chicks are hatched. This goes far to prevent the trouble with the chicks. When corn, coarsely ground, or cracked wheat is fed, it is well to stir a teaspoonful of turpentine in a pint of the food and give it in this way. This method at once stopped the disorder in some broods of young turkeys reared by the writer last Spring, and not one of more than 30 was lost, while the year previous more than half of the broods died in the first four weeks. It is the vapor of the turpentine that kills the worms, and after two or three doses of it this begins to pass through the lungs quite freely.

Curing Goose Feathers.

There is a large quantity of oil in the feathers, as may be known by the ease with which water is shed from this bird's back. This oil quickly becomes rancid and offensively odoriferous. And the beds of the farm wife are apt to give evidence of this by their disagreeable odor. Besides, this oil attracts a moth whose business it is to get rid of these bad-smelling feathers, and, laying its eggs in them, they soon become alive with crawling things. This is why some persons will choose a soft plank, rather than a feather bed, for a couch to rest upon.

The trouble may all be avoided and the beds be made as sweet as the fairies' beds of rose leaves by a simple process of scalding and washing the feathers in strong soap suds. The feathers are put into bags made of mosquito net and thoroughly washed, wrung out, and laid on the grass to dry, being now and then shaken well. When dry, a little beating with a switch will loosen them up, and they will come out bright and soft and fit for the downy pillow on which the tired farmer may seek his well-earned rest.—*New York Times.*

Fancy Articles.

EDITOR AMERICAN FARMER: Will someone tell how to make some pretty things to decorate a farmers' sitting room? Fancy articles made of silk, satin, velvets, and plush are lovely to look at, but when soiled their beauty is gone; and they cost more than most farmers' wives or daughters can afford to pay.—LOUISA FUNSTON, Gove County, Kan.

NEW PUBLICATIONS.

NEW JERSEY ROAD LAWS. Published by the State Board of Agriculture, Hon. Edward Borrough, Merchantville, N. J., President; Franklin Dye, Secretary.

This is a valuable compendium of the most recent and important road laws of the State of New Jersey.

REPORT OF THE MASSACHUSETTS BOARD OF AGRICULTURE. Published by the Board, Wm. R. Sessions, Hampden, Mass., Secretary.

The 39th annual report of the Secretary of the Massachusetts Board of Agriculture is an admirable volume, and cannot help being of the greatest value to all who are fortunate enough to come into possession of it. It contains also the ninth annual report of the State Agricultural Experiment Station. It opens with a report to the Legislature of Massachusetts, by Secretary Sessions, which is full of interesting matter relating to farming in Massachusetts during 1891. There is a review of the weather and the crops, and a valuable statement in regard to the abandoned farms, of which 906 are reported. Then there are full reports of the meetings of the State Board of Agriculture, with the papers presented at each, with no less valuable discussions following the presentation of the same. The papers on "The Crossing of Plants," "The Agricultural Situation," "Sheep Husbandry in Massachusettes," "Fruit-growing," "Work of the Weather Bureau," "Breeding and Feeding Swine," "Country Roads," "The Gypsy Moth," "The Report of the Dairy Bureau," "Laws of Competition as Affecting the Massachusetts Farmer," "The Employment of Farm Labor," "The Report of the Cattle Commissioners," and the "Report of the Agricultural Experiment Station," are all of peculiar value and interest, and should be in the hands of every farmer. Secretary Sessions is to be complimented on the intelligence and skill with which he has gotten the report up.

CATALOG OF DIXIANA STOCK FARM FOR 1892. J. S. Coxey, Proprietor, Lexington, Ky.

Dixiana is located six miles from Lexington, Ky., and has been for years famous as the birthplace of some of the grandest thoroughbreds in the history of the American turf.

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THE GARDEN.

Pluckings.

Two square rods of asparagus bed are sufficient for the largest family. Every farmer can afford this much ground, and besides it saves food grown on other ground.

There is now in Hampton, England, a grapevine which was planted in 1768, and which measures at the present time 47 yards. During a recent year it produced 2,500 bunches of grape.

It is found that the bulb of the calla lily makes very appetizing food, and Florida farmers are planting it by the acre. The bulb is first boiled and then fried, roasted, or hashed with cream.

Laths make a good substitute for the bean poles, which are becoming harder to get every year. Nail three laths together at one end, with a single wire nail, and they will form when spread out a tripod sufficiently high for a hill of beans.

Peanuts can be successfully cultivated on land that is light and sandy, providing it be of a calcareous nature. Marl is a good fertilizer for this crop, as it furnishes lime in its best form. Stable and farmyard manures do not seem to be well adapted to the crop.

Currants should have the benefit of partial shade, but it should not be that afforded by large trees, as the bushes would have to be so near the trees as to be liable to have their soil robbed of its food by the roots of the trees. That afforded by some building or fence is better.

Uncooked, scabby potatoes should not be fed to stock, as the fungus will be diffused in the manure and carried with it to the field. Unless potatoes are dug as soon as possible after they are ripe, the scab spreads, and additional damage is done. The planting of scabby tubers alongside of healthy ones will soon contaminate the healthy ones.

The red prairie lands of Alabama have been found suitable for the production of grapes. The black varieties, with the exception of the Telegraph and Black Eagle, were perfect in the sacks, while the white grapes rotted more or less. Of the red varieties, the Delaware and Wyoming did well. The Perkins, Ives, and Norton Virginia can be kept in sacks for 30 days after ripening. Perkins is said to be the best variety that can be grown, the vines being healthy and prolific.

Maine's Great Cabbage Patch.

Cape Elizabeth is the great cabbage garden of the State of Maine. Since November 25,000 tons of the vegetable have been shipped from the town, and the average price received by the farmers was $9 a ton. And there are lots of cabbages left.

Spraying Gooseberries.

If the mildew can be prevented, as fine gooseberries can be raised in this country as in England, which is saying very much, for that is one fruit in which they beat us out of sight. It has been found that mildew can be prevented by praying with ammoniated copper, prepared as follows: Three ounces of carbonate of copper is dissolved in one quart of the strongest ammonia, and the solution is diluted with 22 gallons of water. This liquid is sprayed on the plants early in the season, and later, as it may be washed off by rains. The addition of enough molasses to make it adherent to the leaves will serve to retain the solution longer. It will be found that an application of lac sulphur to the foliage also destroys the mildew.

Under or Over.

The Michigan Agricultural College has been making a series of careful experiments as to the relative value of placing the fertilizer under or over the potato seed, in every one in which the fertilizer was placed under the seed the yield was larger than in the one having the fertilizer over the seed, and, curiously, very nearly in the same proportion. This is shown by the following table:

	No. 1. Bush.	No. 2. Bush.	No. 3. Bush.	No. 4. Bush.
Fertilizer under seed..	221 2	216.2	184.9	219.1
Fertilizer over seed..	190.3	171.9	143.1	186.5

Test No. 4 was with manure.

This is in accordance with the practical experience of most farmers, though some writers of high reputation have held that when the fertilizer was placed under it was liable to leach away out of reach of the roots.

Too Much of a Gamble.

After 31 years of experience in raising hops, Frank M. Terry feels that he cannot conscientiously recommend the business to the farmers of Kansas. He writes in the *Prairie Farmer*: "To begin with, let me say that hops will hop the highest, hop the lowest, of anything that hops, and I know it. The hop business has ruined more than it ever made. There was a time when * * * it took three barrels of hops and two and three-fourths bushels of malt to make a barrel of beer, but in this latter part of the 19th century all things have changed. With tobacco, corn, and drugs, I think they use only one pound of hops. * * * In a little while they will make beer without hops, and then we poor hop-growers must do something else or go to the wall. I hardly know of a place on the American Continent where hops could get so much pure air as in Kansas. You would have to have your poles made of iron, or you would get up some morning and find your hop-crop over in the next County. I don't think it would take long to harvest a crop in your State. It takes five bushels of uncut roots to set an acre—that means $10; it takes 1,500 to 2,000 poles per acre. You can't set out 10 acres of hops, build your own hop-houses, get all the fixtures and poles one cent less than $1,500. Now my advice to you is just let the business alone. Within the last 10 years I lost 120 acres of hops by hop lice. The hop business is like a lottery."

Throughout Pennsylvania there is a contest among cigar-makers to lead in the number of cigars made in a day or week. A Miss Lehman recently made an excellent record, and what is thought to be the best. She made 6,000 cigars in five days.

THE FARM.

Straws.

It is estimated that the average life of a tradesman is about two-thirds that of a farmer.

Jack-rabbits are becoming a pest in the Dakotas, and threaten to do much damage to the farms.

Ten thousand acres on Cape Cod, which were 30 years ago barren plains, are now covered with planted forests.

It is said that Lancaster County, Pa., grows more tobacco than any other County in the United States. In 1889 the crop amounted to 19,217,800 pounds.

A good squash for the table is the Woodbury. It resembles the Hubbard, and has a hard shell. It is earlier than the Hubbard, of a better flavor, and is free from green streaks. This squash, which is rapidly gaining favor, was introduced by D. B. Woodbury, and is a cross of the Hubbard and Butman.

Idaho will furnish a novel feature for the World's Fair, by practically illustrating the system and benefits of irrigation. A section of sage brush soil will be transported to Chicago, and through this ditches and channels will be run, and flowers, fruits and trees grown. This exhibit will especially attract intending settlers of Idaho.

The lateness of Spring this year has wrought great damage to crops throughout the country. A perceptible decrease in the acreage of the cotton crop is apparent, while corn and wheat have suffered particularly from the heavy rains. The Western States, with the single exception of South Dakota, have little prospect of increasing the acreage of their wheat crop. In that State conditions point to the production of about one-half more wheat this year than last.

Smut on oats may be prevented by the following simple and cheap remedy: In one vessel have water heated to about 120°, and in another vessel heated to about 135°. A loosely-made basket, smaller than the vessels, should be filled with oats, the cover fastened down, and it should then be set in the vessel in which the water is heated to 120°. Let it stand about 10 minutes, shaking it up occasionally, then take it out and dip it quickly in the water heated to 135°, shake or stir it for five minutes, and then spread out to dry. It has been shown that this treatment not only prevents smut, but increases the yield of grain.

The Chinese market in Mott street, New York City, obtains its supplies from Steinway, Long Island, where there are four farms, covering three and a half acres. Twelve Chinamen attend to these farms, using seeds that come from China. The use of our vegetables is not understood by these people, and very few American products are eaten by them. Chinese celery, resembling somewhat the American article, is called bak-tin. Turnips are known as lou-bak. Probably the most curious product of these farms is a long melon, which looks like a slender cucumber, covered with spikes. This is called a lak-wa, and its seeds are cut up and boiled.

Oat Culture in Texas.

EDITOR AMERICAN FARMER: There is probably no State in the Union that is so adapted to the culture of oats as the Lone Star State. Her soil and seasons seem to be adapted to the cultivation of this cereal. It is one of the most important crops of the State. The yield is above the average given in the report of the United States Department of Agriculture. In 1889 the average value per acre was given as $6.26, and in Texas the average was $6.82. The following table will show the average production, acreage, and value of crop for three years:

Year.	Acres planted.	Bushels per acre.	Value per bushel.	Value per acre.
1887	561.02	24	32c.	$7 68
1888	567.468	31.45	27c.	8 49
1889	547.848	27.31	25c.	6 82

From 30 to 100 acres have been raised in this State. The Texas Red Oat has a name far and wide as one of a great yield. The future of the oat in Texas is worthy of notice. According to the report of the Department of Agriculture for 1889 and 1890, there were organized in 1890 205 Counties in the State. Suppose one-half of these new Counties produced as much as Dallas County did in 1889—1,432,890 bushels. The result would be 303,772,680 bushels. These, at 40 cents a bushel, would bring $12,452,679.88. This is an enormous amount, but it only shows what Texas can do.—W. L. MOORE.

No Such Thing as Mummy Wheat.

Some seeds would live only a very short time after they were shed. It was said that the seeds of the willow would not live more than a few days, some said more than a few hours, they were so speedily dried up; the little embryo was killed, and the whole of the life was gone. Of course, this cut at the root of all stories about mummy wheat. It was quite certain, as had been clearly established again and again, that no seed which was buried with the mummy at the time it was put in the coffin had ever germinated. It was not only the examination of the seed that would establish that; experiments had been made to show that this was not the case. A large number of seeds in the British Museum had been examined, taken from mummies, and they were all in the same condition that the mummy itself was in. It would be impossible to stretch out the arm of a mummy, because the whole of the muscle was entirely burned up by the slow action of the oxygen, and it was completely rigid. It was so with the whole of those grains of wheat and flax and various other seeds that were preserved; they were in the same condition. They had been subject to the slow-burning action of the oxygen, and the whole of their vitality had disappeared. With regard to what was grown as mummy wheat, it was only a form of corn that was still extensively cultivated on the southern shores of the Mediterranean, and was easily obtained from Arabs and others who were always ready to impose upon travelers, who brought it home as true mummy wheat.—*Notes and Queries.*

Asthma The African Kola Plant, discovered in Congo, West Africa, is Nature's Sure Cure for Asthma. Cure Guaranteed or No Pay. Export Office, 1164 Broadway, New York. For Large Trial Case, FREE by Mail, address KOLA IMPORTING CO., 152 Vine St., Cincinnati, Ohio.

THE MARKETS.

THE WOOL MARKET.

BOSTON, May 14.—The market has been very quiet with a great deal of poor stock offered and buyers chary. The attitude of dealers at this time is very bearish, as they are soon to be in the market for wool, so do not care to push th market up; and manufacturers are of the sam mind, too, and are buying in a hand-to-mouth order, but of such sales of desirable wools that actually take place there is no question but that buyers find less to their advantage t an heretofore.

It is reported that farmers in Ohi › are holding out for 30 cents, at which the dealers here scout. All the same, the scarcity of stocks would indicate that the market will open high and maintain itself. The 'sales for the week reported in the *Journal of Commerce* for to-day are:

Ohio and Pennsylvania Fleeces: The sales include 30,000 pounds Ohio XX, 29c; 15,000 Ohio X and XX, 27@28c; 23,000 Ohio, No. 1, p t. Total, 68,000 pounds.

Michigan Wools: The sales include 40,000 pounds Michigan X, 25@25½c; 30,000 Michigan, 25c; 25,000 do, p t. Total, 95,000 pounds.

Combing and Delaine: The sales include 40,000 pounds Michigan delaine, 2 c; 30,000 do, 29c; 4,000 Ohio, 31c; 20,000 combing, 30c; 25,000 ¼ and ⅜ combing, 26@28c; 30,000 do, p t. Total, 148,000 pounds.

Scoured Wools: The sales include 45,000 pounds scoured, p t; 10,000 do, 45@55c; 5,000 do, 50@52c; 12,000 do, 38@40c; 19,700 do, p t; 60,000 do, p t. Total, 151,700 pounds.

Texas and Southern Wools: The sales include 25,000 pounds Texas, 18c; 18,000 do, p t. Total, 43,000 pounds.

Oregon Wool: The sales include 20,000 pounds Oregon, 16c; 25,000 do, p t. Total, 45,000 pounds.

California Wools: The sales include 50,000 pounds California, p t; 28,000 do, 16@17c. Total, 78,000 pounds.

Pulled Wools; The sales include 25,000 pounds pulled, p t; 30,000 do, 36c; 80,000 do, p t; 32,000 do, 32@37c; 100,000 do, p t; 75,000 do, 28@33c; 20,000 do, p t. Total, 362,000 pounds.

Territory Wools: The sales include 37,000 pounds territory, p t; 25,000 do, 17@18c; 80,000 do, p t. Total, 142,000 pounds.

Unwashed and Unmerchantable Fleeces: The sales include 15,000 pounds fine unwashed, 18@20c; 30,000 do, p t; 42,000 unmerchantable, p t. Total, 87,000 pounds.

Foreign Wools: The sales includ› 200,000 pounds Montevideo, 27@28c; 250,000 Cordova, p t; 200,000 do, p t; 7,500 cape, p t; 75,000 carpet, p t; 45,000 Australian, 32@33c; 7,000 do 34c; 80,000 do, 35@40c; 120,000 do, p t; 140,000 do, p t. Total, 1,124,500 pounds.

he sellihg prices of the market for leading descriptions are:

Ohio and Pennsylvania No. 1 fleece	33a34
Ohio and Pennsylvania X	26a27
Ohio and Pennsylvania XX	27a28
Ohio and Pennsylvania XX and above	28a29
Michigan X	25a26
Michigan No. 1	33 ..
Combing, No. 1	35a37
Combing, No. 2	33a35
Kentucky and Ind. ¼-blood combing	26a27
Kentucky and Ind. ⅜-blood combing	27a29
Missouri ¼-blood combing	25a26
Missouri ⅜-blood combing	26a27
Canada combing	33a34
Delaine, Ohio fine	30a32
Delaine, Michigan fine	28a30
Montana fine	14a17
Montana medium	19a22
Wyoming fine	14a17
Wyoming medium	18a21
Kansas and Nebraska fine	13a16
Kansas and Nebraska medium	16a19
Georgia	25a26
Texas Spring medium, 12 mos	20a22
Texas Spring fine, 12 mos	18a21
Texas Spring fine, 6 to 8 mos	17a20
Texas Spring medium, 6 to 8 mos	21a22
Texas Fall	14a20
Kentucky ¼-blood clothing	24a26
Kentucky ⅜-blood clothing	26a27
Unwashed fine Ohio and Michigan	18a21
Unmerchantable Ohio	20a21
Unmerchantable Michigan	19a20
Lambs, super pulled	34a40
Super pulled	30a44
Extra pulled	28a34
Canada pulled	28a32
Western super	25a30
California Spring	14a24
California Fall	10a16
Oregon east	15a19
Oregon fancy	20 c22
Oregon fine valley	17a21
Oregon medium valley	24a25
Montevideo	27a30
Australian and New Zealand	32a41
Foreign carpet	12a26

IN NEW YORK.

NEW YORK, May 14, 1892.

There is absolutely no spirit of speculation here, and buyers and sellers meet from day to day in the most amicable manner, merely taking care of the trade for that particular 24 hours. It is a debatable question between them whether there is any real improvement in the market, but those who insist that there is seem to have the best of the argument. In matter of price no important changes can be discovered, but t ere is a positive showing of firmness that seems to insure the market against any further drop this season, and may lead to some advance.

IN PHILADELPHIA.

PHILADELPHIA, May 14, 1892.

The market is in a "between seasons" condition. Trade is less active, because there are comparatively few desirable lots of old wool left unsold, and the new clips have not yet begun to arrive in sufficient quantity to play any important part in current transactions. There is a good inquiry, particularly for low quarter and half-blood wools, but these are now practically cleaned up. Fine and medium wools are also in small supply.

The general market is firm, but shows no quotable change. Anything desirable among the remnants of old clips is held with confidence, and in some cases dealers ask a fraction more than recent quotations; but, except in rare instances for some special lots, no advance is obtainable. Trade in new wools at country points is opening up at prices that seem to be above a parity with local quotations, but the course of the market has not yet been clearly defined. The reaction from lowest prices abroad has had a tency to strengthen confidence in the interior, although it has had no effect here except (in connection with dwindling supplies) to check the downward tendency of values.

COTTON.

BOSTON, May 14.—The spot market is quiet and steady in tone, in sympathy with the leading markets. Middling Uplands, 7¼c; Alabama, 7¼c; New Orleans and Texas, 7¼c.

NEW YORK, May 14.—The spot market is quiet and steady, with quotations as at previous writing. Low Middling Uplands, 6¾c; Middling Uplands and Alabama, 7 5-16c; New Orleans and Texas, 7 11-16c.

LIVERPOOL, May 14.—The spot market has experienced a moderate business, with quotations 1-16d higher. Uplands, 3 15-16d; New Orleans, 4 1-16d.

SILVER.

NEW YORK, May 14.—Both the home and foreign markets for silver displayed renewed strength to-day, and quotations again ruled higher.

The London cables reported bars at that center up to 40¼d. per ounce.

In sympathy with the rise on the other side the commercial price of bars here advanced, touching 86½. This carried the bullion value of the standard silver dollar to 66.22 cents.

GRAIN.

NEW YORK, May 14.—The wheat ma·ket opened dull and a little easier, notwithstanding the reports of continued heavy rains in the West and Northwest. The weakness was quite a surprise in view of this news, and shows conclusively that the market is a narrow trader's market, with the public taking but little interest in the changes.

Foreign advices were of quiet markets abroa and foreign houses were doing very little in American options. Shortly after the opening the market here turned dull and was quiet at about ½c decline from the close of last night. The e is a growing conviction that the continued wet weather will seriously affect the total crop, but as yet this conviction has not reached strong enough proportions to have influence on the market.

King & Co., of Toledo, say: "Chicago amateurs are trying to figure what the crop report indicates. The majority seem to think it means a Winter wheat crop of about 300,000,000 bushels, against 390,000,000 a year ago. It is purely guess work. No estimate of the area will be given until the June report. Very little was Winter killed, and the area is not much different from last season. The average yield per acre varies from 9½ to 15 bushels, and the conditions henceforth will have an important bearing on this. It will soon be too late to seed Spring wheat, and the area of that will probably be short."

The corn market this morning opened active and higher with quite a good demand, owing to the reports of further rains and heavy weather in the corn belt. Notwithstanding this fact, which is very unfavorable for the planting of the crop, the market turned weak shortly after the opening and sold off. Local trader› were good sellers and appeared to take no stock in the reports of delayed seeding. There was quite a little buying for foreign account, but this appeared to have nothing more than a steadying effect on prices. Toward noon the buying orders began to have effect again, and the market became strong.

Range of prices to-day:

Wheat.	Opening.	Highest.	Lowest.	Close Ys'dy.
May	89½	90½	89½	90½
June	90½	90½	90½	90½
July	91½	91½	90½	91½
December	93½	93½	93½	93½
Corn.				
May	54½	54½	54	54½
June	52½	52½	52	52
July	50½	50½	50½	50
Oats.				
May	35½	35½	35½	35½
June	34½	35½	34½	35½

AT CHICAGO.

CHICAGO, May 14.—Range of prices to-day:

Wheat.	Opening.	Highest.	Lowest.	Close Ys'dy.
May	82½	83	82½	83½
June	.....	.....	.....	82½
July	82½	82½	81½	82½
Corn.				
May	47½	48½	47½	48½
June	44½	44½	44½	44½
July	44½	44½	43½	44½
Oats				
May	29½	29½	29½	30½
July	30½	30½	29½	30½
Lard.				
July	6 35	6 35	6 32½	6 37½
Ribs.				
July	5 87½	5 90	5 85	5 90
Pork.				
July	9 85	9 85	9 82½	9 87½

Mahomet, the founder of Islamism, did not hesitate to work with his own hands. He kindled the fires, swept his rooms, made his bed, milked his ewes and camels, mended his stockings, and scoured his sword.

CORN AT NORFOLK, VA.

Can It Be Raised at 15 Cents a Bushel?—Experiences of Truckers.

EDITOR AMERICAN FARMER: In our work during the past few years we have been in close touch with our farmers and truckers here, and have not only felt a very deep interest in their work, but have also felt like doing anything and everything possible to promote the agricultural interests of this beautiful, attractive, and productive section of country. We have had many a discussion with our people here as to the "cost of production," which point is very often neglected by many of our best farmers, and entirely lost sight of by the masses who till the soil. The question as to the cost of a bushel of corn in the crib here has developed the fact that it costs all the way from 15 to 30 cents per bushel. Most any man and most any kind of management will raise the 30 cent corn here, but it takes a good man and fine management to put corn in the crib at an entire cost of 15 cents per bushel. Our informant raises about 30 acres of corn each year, and he claims that the corn grown after Irish potatoes (the same season) costs him but 15 cents per bushel.

To grow a sure crop after potatoes, which here are planted in March and dug in June usually, he, at the last cultivating of the potatoes, plants a row of corn with his one-horse planter between the rows of potatoes. The corn is 10 to 15 inches high at the time the potatoes are taken off. The ground being warm and fine the crop comes rapidly on, and makes never less than 40 bushels to the acre. In this case the ground is already prepared; not a cent is to be charged on that account to the corn crop. The first expense is that of seed and planting the same, both items very small indeed. The ground being, as it naturally would be, free from grass or weeds and the growth of the corn very rapid, it needs but very little cultivation.

Now, we will take his corn as a regular crop, and ascertain the expense of making the crop. He figures on the old Virginia method, as follows: One good field hand and a mule in six months' time will make and crib 25 acres of corn. One man, six months at $15 per month, equals $90. One mule, six months at $10 per month for wear, tear, and keep, $60. Extra help, incidental expenses, etc., $50 additional, making all told a cost of $200 to grow and crib 25 acres of corn. He counts on 40 bushels to the acre, often running much more than that. From the 25 acres he never gets less than 1,000 bushels of most excellent corn at a cost all told of $200. This equals 20 cents per bushel. He claims and can easily show that when he grows corn after potatoes he can reduce this cost fully one-third, and, to be perfectly safe, he claims that corn grown after Irish potatoes can be grown and put in the crib for 15 cents per bushel. We have questioned him carefully and closely, and fail to find any flaw with his figures or with his plan. Our truckers can grow fine crops of corn after kale, cabbage, spinach, peas, or potatoes, or any early Summer or Spring crop is taken off the land, thus getting two and sometimes more crops a year from the same piece of land, and it would seem entirely unnecessary for our farmers and truckers ever to have to buy corn to feed on the farm.

One of our truckers is just this week cutting a crop of crimson clover that is too heavy to cure properly on the ground it grew on, and if the land, after a crop of potatoes has been taken off in June, lies idle the balance of the season, one can cut one and one-half or two tons to the acre of natural grass—"crab grass"—worth from $10 to $12 per ton for feeding purposes on the farm. There are fully 1,000 tons of hay brought to this market each month in the year and many thousand bushels of corn, all of which should be grown right here, within 15 miles of this seaport. We have the soil, the long growing season, and the positive and strong demand for corn and hay, and why more of both should not be grown we are at a loss to understand. We have in our office two strings of corn sent us from a farm altogether within the actual limits of the great "dismal swamp," and this corn would do credit to the best corn farm in the "great West" or any other portion of the country.

Lands range in price from $10 per acre up to $75—seldom going higher than this except for trucking purposes, when as high as $200 or more per acre has been paid. The best trucking lands have largely been taken and utilized for market gardening purposes, but the fine grass and corn lands have been neglected and can be bought at prices named above, and at the present time, as well as in all probability for 25 years to come, hay, corn, early lambs, chickens, milk, butter, and many other of the neglected farm products (neglected here) will not only pay better than anywhere else in the United States, but will actually pay better and more sure than the truck crops. Think of its being possible to grow corn here and put it in the crib for 15 cents per bushel, and then think of this market taking more than a half million bushels of Western corn per annum at prices ranging from 50 to 70 cents per bushel.—A. JEFFERS, Norfolk, Va.

Stuck in the Mud.

At one time the Clyde was only navigable to near Glasgow for very small vessels.

A skipper, navigating his way up, stuck in the mud near Renfrew, and was not sparing in strong language at the delay occasioned. While waiting for the rising tide he saw a little girl approaching the river with a bucket to fetch some water.

This was too much for the poor skipper, and leaning over the side he thus addressed her:

"If you tak' one drop of water oot here till I get afloat, I'll warm ye for it."

An interesting table is being made for the World's Fair by the son of a Florida editor. Upon the table will appear an inlaid map of the State, with each County represented by a separate piece of native Florida wood.

It is estimated that the loss of food crops by injurious insects reaches $500,000,000 per annum.

NORMAL TEMPERATURE AND RAINFALL, WITH DEPARTURES THEREFROM, FOR THE WEEK ENDING MAY 13, 1892.

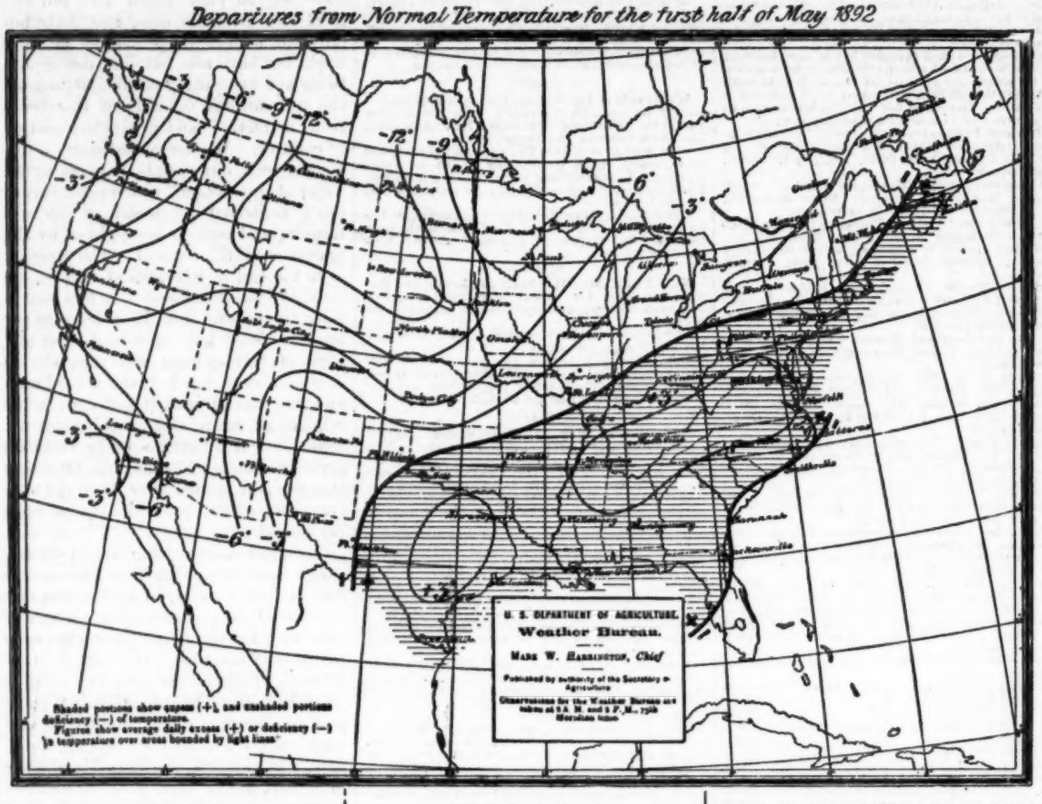
DISTRICTS.	TEMPERATURE			RAINFALL.		
	Past 7 days.		Mar. 1 to date	Past 7 days.		Mar. 1 to date
	Normal.	Average daily departure.	Seasonal departure (average daily).	Normal.	Departure.	Seasonal departure.
Atlantic Coast.	°	°	°	In.	In.	In.
Eastport, Me.	46	0	+1.3	.98	— .90	—4.67
Portland, Me.	52	— 2	0.0	.70	+ .15	—3.21
Boston, Mass.	54	1	+0.7	.77	— .22	—3.26
Block Island, R. I.	50	0	—0.5	.84	+ .08	+ .17
Albany, N. Y.	57	— 2	—1.7	.62	— .30	—2.68
New York City	58	0	—0.3	.70	+ .14	— .58
Philadelphia, Pa.	60	1	—0.8	.69	— .01	+ .60
Atlantic City, N.J.	55	0	—1.2	.60	+1.36	+ .51
Baltimore, Md.	62	— 2	—2.1	.77	— .19	+2.33
Washington, D.C.	62	— 3	—1.5	.84	— .38	+1.97
Lynchburg, Va.	64	— 3	—1.4	.84	+ .22	— .33
Norfolk, Va	64	1	—0.8	.91	+ .05	+1.02
Charlotte, N. C.	67	1	—2.2	.98	— .16	—2.09
Wilmington, N. C.	68	— 3	—1.9	.90	— .52	—4.72
Charleston, S. C.	71	1	—0.8	.84	+ .35	—5.09
Augusta, Ga.	72	— 3	—2.2	.77	+1.03	—2.66
Savannah, Ga.	73	1	—1.2	.40	+1.10	—2.57
Jacksonville, Fla.	74	+2	—0.2	.92	— .94	—6.57
Key West, Fla.	79	0	—1.5	.74	— .74	— .29
Gulf States.						
Atlanta, Ga.	66	0	—2.3	.84	— .44	— .72
Pensacola, Fla.						
Mobile, Ala.	73	0	—2.2	.98	— .60	—2.42
Montgomery, Ala.	72	+ 1	—0.3	.91	+ .17	+ .95
Vicksburg, Miss.	72	0	—2.1	1.14	— .98	—1.10
New Orleans, La.	74	0	—1.8	1.12	+ .40	+1.87
Shreveport, La.	73	0	—3.1	1.01	— .23	+ .14
Fort Smith, Ark.	68	— 5	—1.7	.99	+1.34	— .23
Little Rock, Ark.	69	— 4	—2.4	1.26	+ .28	+ .37
Palestine, Tex.	71	+ 1	—1.1	1.03	— .01	— .35
Galveston, Tex.	75	+ 1	—1.7	.91	— .70	—5.17
San Antonio, Tex.	74	+ 2	+1.2	.77	— .71	—5.06
Corpus Christi, T.	75	+ 2	—0.2	.78	— .69	—3.13
Brownsville, Tex.	77	+ 4	.....	.74	— .74	.....
Ohio Val & Tenn.						
Memphis, Tenn.	68	— 2	—1.3	.90	+2.90	+3.14
Nashville, Tenn.	66	— 1	—1.6	.80	+ .38	+1.15
Chat'ano'ga, Ten.	67	0	—1.1	.98	— .39	— .61
Knoxville, Tenn.	65	0	—0.6	.84	— .66	— .91
Louisville, Ky.	65	— 6	—2.0	.84	+ .12	+2.34
Indianapolis, Ind.	61	— 5	—1.5	.91	+ .59	+1.78
Cincinnati, Ohio	63	— 7	—2.1	.75	+ .41	+1.43
Columbus, Ohio.	60	— 5	—1.3	1.10	— .83	—2.61
Pittsburg, Pa.	61	0	—1.8	.77	— .28	— .00
Lake Region.						
Oswego, N. Y.	52	— 5	—1.8	.56	— .27	—1.46
Rochester, N. Y.	54	— 3	—0.5	.64	— .37	—1.14
Buffalo, N. Y.	52	— 4	—0.8	.70	— .16	— .36
Erie, Pa	54	— 6	—1.7	.74	— .02	+ .85
Cleveland, Ohio.	55	— 6	—0.6	.70	+ .22	+3.21
Sandusky, Ohio.	56	— 5	—0.6	.77	+ .11	+5.18
Toledo, Ohio						
Detroit, Mich.	58	— 7	—2.3	.74	+ .28	+2.69
Port Huron, Mich	50	— 5	+0.2	.70	+ .30	+ .27
Alpena, Mich.	47	— 3	+0.5	.80	+ .10	— .05
Marquette, Mich.	46	— 5	+1.5	.56	— .54	+1.82
Gr'd Haven, Mich	52	— 6	—1.3	.74	+ .42	+1.37
Milwaukee, Wis.	52	— 8	—1.5	.77	+ .76	+3.23
Chicago, Ill.	55	— 8	—2.7	.84	— .16	+1.13
Duluth, Minn.	46	— 7	—2.5	.69	— .11	+2.72
Upper Miss. Val.						
Saint Paul, Minn.	55	—10	—3.3	.70	+ .06	—1.66
La Crosse, Wis.	56	— 9	—2.7	.63	+ .96	+3.32
Dubuque, Iowa.	57	— 9	—2.5	.87	+ .29	+4.27
Davenport, Iowa.	58	— 9	—2.0	1.00	— .07	+7.24
Des Moines, Iowa.	59	—12	—1.9	1.05	+ .66	+4.73
Keokuk, Iowa.	60	— 9	—2.4	.88	+ .52	+6.65
Springfield, Ill.	61	—10	—3.1	1.12	— .13	+6.31
Cairo, Ill.	66	— 4	—1.1	.84	+1.00	+ .13
Saint Louis, Mo.	64	— 9	—2.8	.86	+1.26	+4.29
Missouri Valley.						
Springfield, Mo.	66	— 8	—3.0	1.40	+ .80	+1.76
Kansas City, Mo.	62	— 9	—3.6	.91	+2.43	—7.14
Concordia, Kan.	60	— 9	—2.5	.92	+2.00	—2.44
Omaha, Neb.	60	—12	—4.0	.98	+1.58	—5.29
Yankton, S. Dak.	57	—14	—2.9	.94	+ .98	—3.80
Valentine, Neb.	55	—16	—5.7	.82	+1.84	—7.64
Huron, S. Dak.	58	—12	—2.3	.77	+1.45	—5.49
Pierre, S. Dak.	55	—13	—4.0	.40	+ .99	—3.06
Moorhead, Minn.	51	— 8	+0.4	.56	— .26	+2.08
St. Vincent, Minn	48	— 4	+0.4	.36	— .14	+1.39
Bismarck, N. Dak	52	—11	—3.0	.56	+ .18	+1.58
Buford, Ft., N. D.	52	—11	—2.5	.35	— .15	+1.39
Rocky Mt. Slope.						
Assinaboine, Mnt.	51	— 9	—3.1	.21	— .15	+ .01
Helena, Mont.	51	—10	—3.2	.28	— .49	— .10
Spokane, Wash.	55	— 5	—1.0	.28	+ .90	+2.17
Salt Lake City	57	— 7	—2.3	.47	— .02	— .05
Cheyenne, Wyo.	49	—14	—4.6	.49	+1.65	+1.50
North Platte, Neb	56	—13	—4.9	.62	+1.07	+3.07
Denver, Colo.	55	—12	—3.9	.74	+ .35	— .16
Montrose, Colo.	55	— 2	—1.9	.17	— .17	+ .40
Pueblo, Colo.	57	— 5	—3.0	.28	— .22	+ .45
Dodge City, Kan.	62	—12	—5.1	.82	+ .38	+ .46
Abilene, Tex	70	— 3	—0.8	1.02	+ .78	+ .27
El Paso, Tex.	71	— 3	—1.2	.07	— .07	— .39
Santa Fe, N. Mex.	54	— 1	—1.1	.16	— .16	+ .50
Tucson, Ariz.	72	— 6	—5.2	.03	— .03	— .01
Pacific Coast.						
Olympia, Wash.	54	0	+0.3	.56	+ .46	— .41
Portland, Ore.	58	— 3	—1.6	.69	+ .59	—1.66
Roseburg, Ore.	57	0	—1.9	.43	+ .50	+1.71
Red Bluff, Cal.	67	—10	—3.9	.32	— .10	+ .06
Sacramento, Cal.	64	— 7	—3.0	.23	+ .05	—1.12
San Francisco, Cal	58	— 3	—1.7	.16	— .06	— .85
Los Angeles, Cal.	63	.....	.....	.06	.....	.....
San Diego, Cal.	61	— 2	—1.4	.07	— .07	— .09
Yuma, Ariz.	77	— 6	—1.6	.00	.00	— .27

NOTE.—The current temperature and rainfall for any station may be found by adding the departure to normal when plus (+), and subtracting when departure is minus (—).

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

Weather-Crop Bulletin for the First Half of May, 1892.

Departures from Normal Temperature for the first half of May 1892


U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief
Published by authority of the Secretary of Agriculture
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time
Shaded portions show excess (+), and unshaded portions deficiency (—) of temperature.
Figures show average daily excess (+), or deficiency (—) in temperature over areas bounded by light lines

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU,
WASHINGTON, D. C., May, 14, 1892.

TEMPERATURE.

The temperature during the first two weeks of May was slightly above the average of previous years in the Southern States, the Ohio Valley, and the Southern portion of the Middle Atlantic States. It was slightly colder than usual in New England and the lower lake region, and decidedly colder in the northwest and at Rocky Mountain stations. The season continues late throughout all agricultural districts, but is recovering rapidly in the southern portion of the country; but the weather continues too cool and the ground too wet for farm work in the central Mississippi valley and northwest.

RAINFALL.

There was more than the usual amount of rainfall generally throughout the Northern States, the rainfall being excessive from the Indian Territory and Kansas northward to Michigan. Generally throughout the northwest the seasonal rainfall from the 1st of March has been from 50 to 100 per cent. greater than usual. In the South Atlantic and Gulf States and over the greater portion of New England the rainfall for the first two weeks of May was less than usual, and in portions of Georgia, Florida, and southern Texas crops have been injured owing to continued drouth, which, however, has been partially relieved by recent rains.

GENERAL REMARKS.

New England—Temperature below; precipitation below in northeast, central, and southwest sections; sunshine average. Season backward. Rain was of great value. Warmer weather needed. Potatoes being planted; some corn planted in south portion. Fruit promises well.

New York—Rainfall above average, except in north and east portions; temperature below and sunshine average. All crops in good condition, but are rather backward; oats and barley coming up well; corn planting will be pushed next week; fruit good.

New Jersey—The most favorable week of season; all growing crops improved, but cool nights still retard early truck; wheat and rye heading; temperature and sunshine about the average, and rainfall slightly below and badly distributed.

Pennsylvania—Crops are looking well in spite of the cool weather and backward season; warmer weather is needed everywhere. Corn planting in southern portions nearly finished. Fruit trees are heavy with blossoms. Gardening has begun.

Maryland—Corn planting nearly finished. Good crop of wheat anticipated. Tobacco plants thriving, but some damage from flies. Pears and early peaches promise well. Strawberry outlook good. Peas will be ready for market in two or three weeks.

Virginia—Temperature 3° to 5° below normal; rainfall about normal, except below in northern section. Light frosts Friday in a few places, but no damage reported. Corn planting largely completed in west and southwest, but less advanced in east portion.

North Carolina—Good rains throughout the State, but badly distributed in east portion; average sunshine; temperature below the last few days. Cotton coming up fairly well; plowing corn in east, still planting in west; wheat heading; transplanting tobacco progressing finely.

South Carolina—Rainfall about normal and fairly distributed; temperature below and sunshine about average. Universal complaints of bad stands of cotton, which look badly from cool nights; late planting coming up; corn a fair average; other crops in fair condition.

Georgia—Showers early in the week have been of great advantage. Temperature and sunshine about normal. Crops in northern half of State are in excellent condition. Previous drouth has caused considerable shortage in late oats in the southern portion, and cotton has also suffered some permanent damage. More favorable reports as to fruit.

Florida—Slight excess in temperature; sunshine about average; rainfall deficient, but showers occurred over greater part of State during week, affording relief from the severe drouth, especially in northeastern and central Counties of Peninsula.

Alabama—Mean temperature for week about 72°; average rainfall for State about 1.02 inches; sunshine about average. Crops of corn and cotton have been revived by well-distributed rains during week; oat crop still in bad condition in south portion because of drouth.

Louisiana—Rains Monday and Tuesday unequally distributed; heavy in some places with slight injury in lowlands; beneficial where light, allowing another week of farm work. Temperature and sunshine above normal. Crop reports continue most favorable; planting fairly completed, except rice, which is three-fourths finished; cotton being scraped and corn plowed.

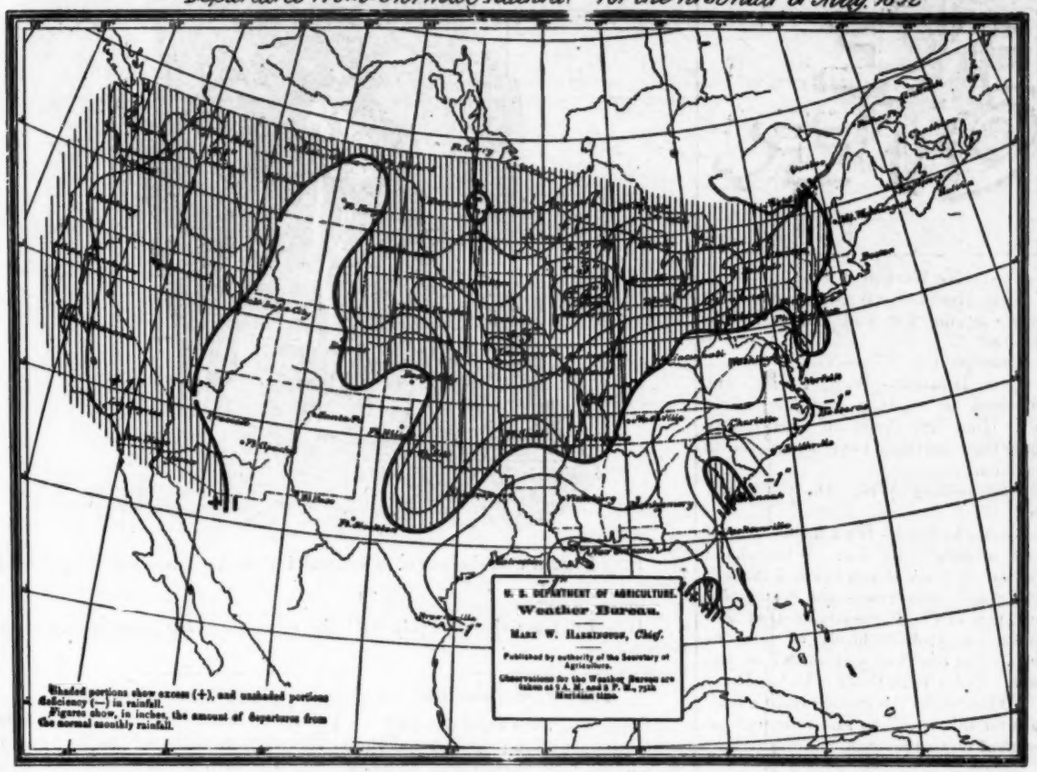
Texas—Heavy rains have damaged cotton over northern portions of State; over other portions, except coast districts and the southwest, where drouth continues, crops have been benefited. Cotton and corn two to three weeks late, but generally better cultivated than usual.

Arkansas—Temperature and sunshine below; precipitation greatly in excess of normal. All farm work greatly delayed by frequent rains. Cotton and corn not doing well; wheat, oats, and grasses fine; dry, hot weather badly needed.

Tennessee—Favorable weather conditions continue and all crops are growing nicely;

WEATHER CROP BULLETIN, ETC.—Continued.

Departures from Normal Rainfall for the first half of May, 1892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Figures show, in inches, the amount of departure from the normal monthly rainfall.

much corn and cotton up and stand is good; some corn is being damaged by cut worms; gardens excellent; wheat, oats, and pastures fine; strawberries being shipped.

Kentucky—Temperature and sunshine deficient; rainfall slightly in excess. Crops growing slowly; wheat, grasses, and tobacco plants never better; prospect for corn unfavorable and some not yet planted owing to wet soil. Season two weeks late.

Missouri—Rainfall heavy; temperature and sunshine deficient; some damage by floods in northern Counties; frost general on 10th, but not much damage; crops on low grounds suffering but fair on uplands; some wheat turned yellow; potatoes rotting; cotton very poor.

Illinois—Temperature and sunshine below; rainfall below, except in extreme southern and western half of central portion. Conditions generally unfavorable; farm work at a standstill and farmers much discouraged; much wheat on bottom lands killed; wheat, oats, and grass on high ground good.

Indiana—Rainfall excessive; temperature and sunshine deficient; conditions favorable to growing crops, but frequent rains prevented plowing and planting of corn. Wheat, oats, grass, and fruit continue in good condition.

West Virginia—Temperature and rainfall below normal; sunshine deficient. Cold, cloudy weather checked germination of corn; grass and corn need warm showers; wheat doing well; frosts occurred, with slight damage to tender garden vegetables, in some localities; oats coming up nicely; farmers behind in farm work.

Ohio—Rainfall excessive; temperature and sunshine below the average, which conditions retarded growth and farm work generally. Crops on low lands slightly injured. Wheat, grass, and oats looking well. Corn mostly planted in southern sections, and some up. Fruit trees in full bloom. Prospects good.

Michigan—Rainfall above and temperature and sunshine below average. Wheat, grass, and pastures promise well, and fruit prospects good for entire State. Rain has delayed farm work. Warm, dry weather much needed.

Wisconsin—No prospect of planting corn and potatoes for some time; conditions unchanged since last week; some danger that cold, wet ground will rot the seed.

Minnesota—There has been but little advance in growth of crops; the grain up looks well; no corn planting during the week; need sunshiny weather.

Iowa—Another unfavorable week for farm work. Temperature below, rainfall above, and only about 12 hours' sunshine. Very little plowing and planting done, and thousands of acres of arable bottom lands under water.

North Dakota—Sunshine and temperature considerably below average; rain slightly below, but fell nearly every day. Early sown wheat and oats rotting in eastern sections; seeding progressing slowly.

South Dakota—Abnormally cloudy, cool, and rainy. Corn planting and balance of oat seeding much delayed; wheat fine and average stand excellent; other vegetation at a standstill; warmth and sunshine much needed; ground soaked and ultimate prospects good, except for corn.

Nebraska—Week cold and cloudy, with excessive rainfall; low ground flooded and all crops injured. Very little farm work done; much of the corn already planted rotten in the ground.

Kansas—Rainfall from two to four inches over State; temperature and sunshine deficient; all conditions unfavorable to vegetation, except in southwest Counties, where rain was needed. Wheat and rye heading out in southern Counties, where corn is being cultivated.

Oklahoma—Precipitation greatly in excess, causing slight injury to all crops, especially corn and cotton, being very injurious in southern portions; temperature and sunshine below average retarding growth of vegetation. Sunshine and warmer weather needed.

Montana—Early part of week cold, with snow flurries daily, and very injurious to young stock; latter part of week warm and pleasant; ground in splendid condition.

Wyoming—Precipitation decidedly above and temperature below normal. Week generally injurious to crops.

Colorado—Too wet for farm work; grain and alfalfa doing well, but bright, warm weather needed; ranges green and pasturage fine.

Arizona—Weather unfavorable for crops of all kinds in northern and central portions. Wheat, barley and alfalfa injured by high winds; fruit injured by frost; warm sunshine needed; vegetables injured by frost in southern portions.

Washington—Average temperature. All vegetation on high land doing well; too much rain on low land. Grain healthy, but growing slowly. Fruit in good condition. Hops growing slowly; few lice. More sunshine needed for everything.

Oregon—Deficient temperature, with excessive cloudiness and precipitation. Spring seeding delayed; Fall grain fine stool; low lands wet; grass luxuriant; first crop of alfalfa being cut; strawberries ripening; cold weather delays shearing—wool extra fine; warm and sunshiny weather needed.

California—Rains greatly benefited grain crops, and in conjuction with cool weather prevented rust. Frosts injured berries, cherries, and prunes. Rains injured beans in Santa Barbara and Ventura Counties. Better prospects for fruit and grain than last report.

MARK W. HARRINGTON,
Chief of the Weather Bureau.

Petrified Prices.

We were sitting on the tavern veranda after supper for a smoke, when an old darky with a crooked leg came along and took off his hat and said:

"Gem'len, I should like to ax yo' a few queshuns, please."

Being told to go ahead, he came up the steps, bowed and scraped, and observed:

"I lost my ole woman dooin' de wah, an' she was buried on de gravel ridge ober yere 'bout two miles. I dun went an dug up de body last week to put it in a new place, and it was all paralyzed to stun."

"You mean petrified."

"Dat's it, sah. Took fo' men to get it out of de grave. Jest dun turned into rock an' looked as nateral as life. Seemed like I was dun talkin' to de ole lady agin."

"Yes."

"She was lyin dar on de grass when a feller driv up in a wagin and offered me $5 fur de body. Do yo' reckon it was right to sell it?"

"Well, that's according to your own feelings."

"Jest so. She was dun dead."

"Yes."

"An' all turned to stun."

"Yes."

"An' so I reckoned it wouldn't hurt nuffin. I got de money an de man driv off. An now Uncle Jason tells me dat I got cheated. He says a paralyzed body am wuth $30. Kin yo' tell me if dat's so?"

"You ought to have got at least $25."

"Hu! Den I was cheated?"

"It looks that way."

"Jest beat right outer $20, hu! Wall, dey doan play dat trick on me agin. I'ze got de market price now, an I knows what figger to ask."

"But the body is already gone."

"Yes, dat body, but I dun buried two odder wives an' three children on dat same grave ridge, and when I git 'em dug out dey is gwine to fetch market quotashuns or I'll tumble 'em right back in agin!"—*St. Louis Republic.*

Washing and Dressing a Baby.

In small houses, while the family is small, the best rooms are very properly used as nurseries, writes Mrs. William Ewart Gladstone in the *Ladies' Home Journal.* The nursing is good, for it is directly under the mother's eye. Here some of the common cares and duties that make a good nurse are practically taught. The simple precautions thus learned are not always attended to when the nurse acts independently of the mother. Old custom lingers long in nursery matters; longest, perhaps, in the first traditional handling of infants, where the experience of the nurse has to be trusted to. The most "experienced nurse" has to be distrusted. Experience is often pleaded as an excuse for carelessness, or as a cause for the nurse's convenience coming before the welfare of the child. To some nurses it is too much trouble to use a thermometer for the infant's bath, they can tell if it is the right heat; if not, it has been said, the infant will cry and look red if the water be too hot, blue if too cold. They are slow, also, to consult the thermometer on the wall; they like the room to be warm, and prefer a bright light from gas or lamps, when the night light is all that should be allowed.

The temperature of the water used for washing an infant should be nearly that of the surface of the body—96° or 98° F. As the child grows older the heat of the water should be gradually lessened, while the limbs should be allowed free exercise in a large tub. Some children do not bear cold water well; good sense, discrimination, and observation should be our guides in this as in all other matters.

Destroyed the Record.

"Was everything lost in the fire?" asked Miss Passee, when she recovered from the excitement.

"Yes, everything."

"The family Bible?"

"Yes."

"Oh, how relieved I am. It makes me feel 10 years younger to hear that."—*Springfield Graphic.*

Increased in Proportion

Dr. Spouter (who is rather inclined to talk shop)—Did you know that mankind was subject to 2,000 different diseases, Miss Debut?

Miss Debut—Indeed! And to think there were only three or four when the doctors first begun.

A Matter of Fact.

Jack Sharpe (from the city)—Uncle Josh, who is that stylish-looking lady that just passed?

Uncle Josh (an old timer) between puffs—Thet's Miss Starling, the play-actress; she's visitin' her relatives down hyar.

Jack Sharpe—Um! quite striking figure. What does she play in mostly, Uncle Josh?

Uncle Josh—Mostly theayters.

The Secret of Happiness.

"Young Britched and his wife get along together very happily."

"There is perfect confidence between them, I suppose."

"It isn't that, but the habit they have of concealing things from each other that makes them happy."

"What do they conceal from each other?"

"Their failings."—*New York Press.*

Enhanced Its Value.

Second-Hand Dealer—Dot vas a fine fit. You look like der Brince of Va'es in dot coat.

Customer—I like the coat well enough, but here are two holes in the tail.

S. H. D.—All der better. Dem holes, my friendt, vas got on der field of honor.—*New York Press.*

He Worked it Fine.

Cute Husband—Was that your last year's Spring hat you had on to-day, Jennie?

Unsuspecting Wife—Yes.

Cute Husband—Well, I never saw you look so lovely in anything in my life. That hat shows off your beauty more than anything I ever knew you to have on.

Unsuspecting Wife—Do you think so?

Cute Husband—It's a fact. And it looks as good as new, too. What a hand you are to make things wear! I thought you would need a new hat for Spring, but you can't get anything that will make you look so lovely as that one does. I'm proud of you when I see you in it. But I must be off. Ta! ta!

"That settles the Spring-bonnet business for this year," he said to himself as he went down the street.

Forgot His Notes.

It is told of a certain minister in London that one Sunday morning he preached his sermon with the following notice: "Brethren, I have forgotten my notes, and shall have to trust to Providence, but this evening will come better prepared."

After the Race.

Longfellow—Look here, fellow, I understood you to say that it was a sure thing—a cinch—that he'd do the business in a walk. Now, here he straggles in last.

Tout—That's right, sonny—in a walk—d'ye see?

A Distressed Millionaire.

He—I heard that she was engaged, and I thought it was safe to propose to her.

She—Well?

He—I did so; she promptly said the other affair was mere nonsense, and accepted me.

The Owner Turns Up.

"Papa, who owns these parks?"

"We do, my son," replied the little boy's father, "we, the people. As a part of the people, James, we have a right to consider ourselves the owners. It is a glorious feature of our Government, my boy," he continued, his eye kindling, "that the people are absolute. All property rights are based on their consent. All titles thus come from them, and will finally revert to them. The will of the people is the supreme law. By the will of the people this lovely park has been reserved and set apart forever as a playground, a breathing place, a common—our common. Here we have a right to come and rest from the toil and worry of life. We are on our own soil. To breathe this pure air, my boy; to stroll at will through these lovely"

"Yah, there!" shouted a harsh, imperious voice. "Get off that grass, ye dirty thafe, or I'll run ye in!"

It was the voice of the park policeman.

The other man must have been mistaken, somehow, in his views on parks.—*Germantown Telegraph.*

Guessed It

The car was not half full, but the youth in the new Spring suit plumped himself down by the side of the handsome girl in gray.

"Possibly—aw—you are holding this seat," he said, with a smile, "for some gentleman?"

"I was," she said, with a sigh of disappointment, "but he doesn't seem to have come."

And the young man in the new Spring suit presently got up and wandered on into the next car ahead.—*Germantown Telegraph.*

An Old Gentleman's Warning.

Young Father—I've just made a big deposit in a savings bank, in trust for my baby boy. When he is 21 I will hand him the bank book, tell him the amount of the original deposit, and let him see how things count up at compound interest.

Old Gentleman—Won't pay. I tried that. My boy drew the money and got married with it, and now I've got to support him and his wife and eight children.

Science on the Run.

Doctor—Troubled with insomnia, eh? Eat something before going to bed.

Patient—Why, doctor, you once told me never to eat anything before going to bed.

Doctor (with dignity)—That, madam, was way back in 1889. Science has made great strides since then.—*Germantown Telegraph.*

A Terrible Warning.

Judge (to woman arrested for shoplifting)—When did you begin this sort of thing?

Woman (weeping)—I began by picking my husband's pockets at night while he was asleep. Then the descent was easy.

Brushes up the Patriotism.

"It does one good to go to the dime museum occasionally."

"Think so?"

"Yes. Brushes up one's patriotism, as it were."

"How is that."

"Why, you have but to look around to see that this is a freak country."

The author dreads the critic, the miser the thief, the criminal the magistrate, and everybody public opinion.

A PREMIUM FREE TO EVERY SUBSCRIBER.

The Last Report of the United States Department of Agriculture, Splendidly Illustrated With Maps and Colored Plates.

THE MOST VALUABLE BOOK ISSUED ANNUALLY IS THE REPORT OF THE SECRETARY OF AGRICULTURE.

The last one printed, which is just out, is for the crop year of 1890.

It is an octavo volume, bound in cloth, of 612 pages, with four folded maps and 46 full-page colored plates.

The articles embraced in the volume comprise the latest information relative to the Propagation of the Silk Worm; Diseases of Cattle and Swine; Article on Irrigation; Mushroom Culture; Statistics of Cereals and Cotton; Reports of Field Experiments in Treatment of the Disease of Plants; Cultivation of the Apple, Peach and Small Fruits; Article on Nut Culture.

There are many other valuable articles upon kindred subjects of vital interest to the agriculturist, copiously illustrated.

The folded maps and charts show the production of wheat, corn and cotton for 10 years, and the results of artesian irrigation. The best idea of the scope of this magnificent work may be gathered from the following list of the illustrations:

Report of the Chief of the Bureau of Animal Industry:
- Diagram A. Average price of hogs and home consumption of hog products per capita.
- B. Average price of hogs, compared with the total production of hog products per capita, and the price of corn.
- C. Production of corn per capita, and the average price per bushel on farms, December 1.

Report of the Entomologist:
- Plate I. New species of Icerya.
- II. The Leefeld fumigator.
- III. Ceratitis capitata and Nephelodes violans.
- IV. Parasites of Nephelodes and Hæmatobia.
- V. Rose chafer and green-striped maple worm.
- VI. State Capitol at Lincoln, Neb., showing trees defoliated by the green-striped maple worm.
- VII. Black scale and Lucilia cæsar.

Report of the Chief of the Silk Section:
- Plate I. Various races of cocoons.
- II. Various races of cocoons.
- III. Various races of cocoons.
- IV. Pruning of mulberry trees, half-standard tree.
- V. Half-standard mulberry tree.
- VI. Pruning of mulberry trees, dwarf.

Report of the Statistician:
- Map I. Corn (maize). Values and yields per acre.
- II. Wheat. Values and yields per acre.
- III. Cotton. Values and yields per acre.

Report of the Microscopist:
- Plate I. Eight edible mushrooms common to the United States. Second series.
- II. Twelve poisonous mushrooms.
- III. Mushroom beds in cellar.
- IV. Mushroom beds in market gardens.
- V. Mushroom house.
- VI. Microscopic researches in food fats.
- VII. Nitrate of silver test of food and medicinal oils.
- VIII. Nitrate of silver test of food and medicinal oils.
- IX. Nitrate of silver test of food and medicinal oils.
- X. Nitrate of silver test of food and medicinal oils.
- XI. Species of mushrooms.

Report of the Botanist:
- Plate I. Ambrosia trifida.
- II. Hieracium aurantiacum.
- III. Linaria vulgaris.
- IV. Cuscuta trifolii.
- V. Plantago lanceolata.
- VI. Cenchrus tribuloides.
- VII. Pennisetum typhoideum.
- VIII. Eragrostis abyssinica.

Report of the Chief of the Division of Vegetable Pathology:
- Plate I. Hollyhock anthracnose.
- II. Anthracnose of cotton.
- III. Ripe rot of grapes and apples.
- IV. Treatment of pear-leaf blight (Bordeaux mixture).
- V. Treatment of pear leaf blight (ammoniacal solution, coppe carbonate).

Report of the Pomologist:
- Plate I. Wild and cultivated pecans.
- II. Pecan tree, in orchard at Ocean Springs, Miss.
- III. Switzer apple.
- IV. Banquet Strawberry.
- V. Brilliant grape.
- VI. Pineapple field at Lake Worth, Fla.
- VII. Zengi.
- VIII. Tsuru.
- IX. Elæagnus pungens.

Report of Agent in Charge of Artesian Investigations:
- Map 1. Map showing results of artesian investigations.

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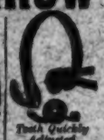

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